USDA United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department, and Florida Department of Agriculture and Consumer Services

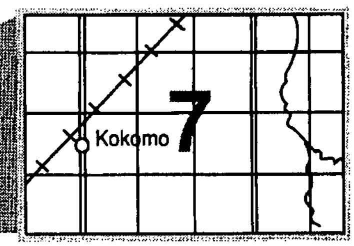
Soil Survey of City of Jacksonville, Duval County, Florida

How to Use This Soil Survey

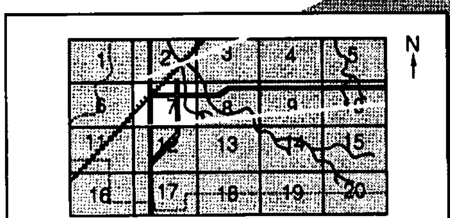
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

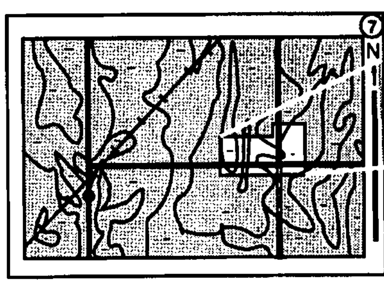


Detailed Soil Maps

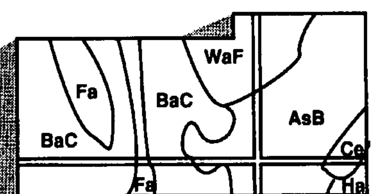


The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet and turn to that sheet.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

Locate your area of interest on the map sheet. Note the map units symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1994. Soil names and descriptions were approved in 1997. Delineations of soil map units that contain urban land reflect photo imagery taken in fall of 1983 and spring of 1994. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This soil survey was made cooperatively by the Natural Resources Conservation Service; the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department; and the Florida Department of Agriculture and Consumer Services. Additional assistance was provided by the Florida Department of Transportation. The survey is part of the technical assistance furnished to the Duval Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Downtown section of the City of Jacksonville. The area is mapped as Urban land.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

Contents

Issued 1998

Foreword

This soil survey contains information that affects land use planning in the City of Jacksonville, Duval County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various decisions for land use or land treatment. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

T. Niles Glasgow
State Conservationist
Natural Resources Conservation Service

Soil Survey of City of Jacksonville, Duval County, Florida

By Frank C. Watts, Natural Resources Conservation Service

Fieldwork by Hershel D. Dollar, David Howell, Douglas L. Lewis, Leon T. Stem, Elmer M. Ward, Carol A. Wettstein, Frank C. Watts, Francis Wilhelm, and Howard Yamataki, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department, and Florida Department of Agriculture and Consumer Services

This soil survey updates the survey of the City of Jacksonville, Duval County, Florida, published in 1978 *(46)*. It provides additional information and has maps of smaller scale. The soil boundaries have been adjusted with reference to color infrared photography and black-and-white photography taken prior to major urbanization in the survey area.

The survey area is along the Atlantic Coast in the northeastern section of the Florida Peninsula (fig. 1). It is bordered on the north by Nassau County, on the west by Baker County, on the south by Clay and St. Johns Counties, and on the east by the Atlantic Ocean. The Nassau River and Thomas Creek form part of Duval County's northern boundary, and Julington Creek forms part of its southern boundary.

Duval County has a land area of 496,948 acres, or 777 square miles. The total area, including areas of water, is 544,500 acres, or 832 square miles. The entire county, except for the municipalities of Baldwin, Atlantic Beach, Neptune Beach, and Jacksonville Beach, is included in the metropolitan government of the City of Jacksonville. The county is about 32 miles long from north to south and 39 miles from east to west.

Elevation in the county ranges from sea level to approximately 190 feet above sea level at the eastern edge of the topographic feature Trail Ridge.

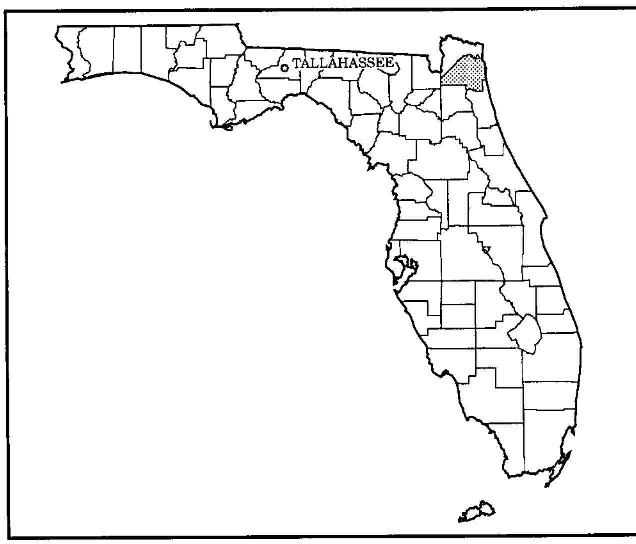


Figure 1.—Location of the City of Jacksonville, Duval County, in Florida.

General Nature of the County

This section gives general information about the survey area. It describes climate, seasonal high water tables, history and development, natural resources, agriculture, archaeology, and transportation facilities.

Climate

Stephen M. Letro, meteorologist, United States Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, helped prepare this section.

The climate in Duval County is characterized by long, warm, humid summers and mild winters *(53)*. It is favorable for the production of crops, livestock, and pine trees. The moderating influence of the Atlantic Ocean and the Gulf Stream on temperature extremes in summer and winter is pronounced along the coast. It diminishes noticeably a few miles inland.

Climatic data presented in tables 1, 2, 3, and 4 are based on records collected at the Jacksonville International Airport *(53)*. Table 1 gives data on temperature and precipitation as recorded in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. Available construction days are shown in table 4.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average maximum temperature has little day-to-day variation. In summer, the temperature can be as high as 96 degrees F at least 1 day a month. In winter, the minimum temperature varies considerably from day to day, mainly because of periodic invasions of cold, dry air moving southward from across the continent. The highest recorded temperature during the period 1941 to 1990 was 105 degrees, which occurred in July 1942, and the lowest recorded temperature was 7 degrees, which occurred in January 1985.

In many areas, particularly near the ocean, temperatures seldom drop below freezing. In areas away from the coast, temperatures are freezing or below freezing about 12 times a year. It is rare that the temperature does not rise above 32 degrees F during the day. There have been only five occasions that the temperature remained below freezing. The most notable occasion was on February 13, 1899, when the maximum temperature for the day was only 27 degrees.

Rainfall is heaviest in summer. In an average year, about 65 percent of the total annual precipitation falls in June through October. The growing season for most crops falls within this period. The remaining 35 percent of precipitation is more or less evenly distributed throughout the rest of the year.

In summer, most of the precipitation occurs along the beaches before noon and occurs as afternoon or evening showers and thundershowers in areas inland. Sometimes, 2 to 3 inches of rain fall within an hour. Day-long rains in summer are rare. Generally, they are associated with tropical storms. Rainfall in fall, winter, and spring is seldom as intense as in summer. According to the National Weather Service at Jacksonville International Airport, rainfall that is more than 8 inches during a 24-hour period occurs in about 1 year out of 10. Hail falls occasionally during thunderstorms, but hailstones generally are small and seldom cause much damage.

The atmosphere is moist, and the average relative humidity is about 75 percent. The humidity ranges from about 90 percent in the early morning to about 55 percent in the afternoon.

Snowfall is rare. When it does occur, it generally melts as soon as it reaches the ground. Since 1871, snowfall has been recorded as 1.9 inches on February 12 and 13, 1899; 1.5 inches on February 13, 1958; 0.5 inch on March 1, 1986; and 0.8 inch on December 23, 1989.

Tropical storms can affect the survey area from early June through mid-November. The chance of winds reaching hurricane force, 74 miles per hour or more, in the Jacksonville area is about 1 in 50. Most hurricanes reaching the latitude of this area tend to move parallel to the coastline, staying out at sea. Others lose much force while moving over land before reaching this area. The very heavy rains and flooding associated with these storms can cause considerable damage.

Extended periods of dry weather can occur in any season but are most common in spring and fall. Dry periods in April and May generally are shorter than those in fall, but they are more serious because temperatures are higher during these months and the need for moisture is greater.

Prevailing winds are generally northeasterly in fall and winter and southwesterly in spring and summer. Average windspeed generally is slightly less than 9 miles per hour. It is 2 or 3 miles per hour higher in early afternoon and is also slightly higher in spring than in other seasons.

Available construction days (table 4) are based on the number of days during which the temperature does not fall below 32 degrees F and precipitation does not exceed 0.10 inch. The average number of these days per year is 271 (including weekends). The best months for construction are March, April, May,

October, and November. These months have an average of 25 or 26 available days each. The least favorable months are January and February, which have an average of 19 available days each. In any given year, there is a 99 percent chance that there will be at least 252 available construction days and a 50 percent chance that there will be more than 278 of these days.

Seasonal High Water Tables

The seasonal high water table is the level at which free water stands in an unlined borehole for a significant period of time (more than a few weeks) during the seasonally wettest time of the year. In Duval County, the seasonally wettest times of the year typically are from January through March and from June through October. These periods correspond to the seasonally highest periods of rainfall. There is typically more rainfall in summer than in winter, but, because there is more evapotranspiration in summer than in winter, the two seasons have similar seasonal high water tables. Typically, the driest time of the year is from November through December. This period corresponds to the seasonally lowest period of rainfall. The second driest time of the year is typically from April through May. During this period, rainfall rates are typically higher than those in November and December but lower than those during winter and summer and evapotranspiration rates are much higher. Soil series have a range of seasonal high water tables. Generally, the seasonal high water is shallowest at the lower elevations and deepest at the higher elevations.

History and Development

Dena E. Snodgrass, historian, helped prepare this section.

Indians lived in the area of present-day Florida for thousands of years before the first European explorers arrived *(28)*. The main Indian groups were the Timucua, Apalachee, Ais, Tekesta, and Calusa. The Timucua Indians, which consisted of 15 different tribes, occupied the survey area *(16)*. The Timucuan Indians had a favored crossing place along the present-day St. Johns River. They called this place Wacca Pilatka, meaning the Place of the Cows Crossing.

The first Europeans to arrive in the survey area were Spanish and French explorers. In 1513, Juan Ponce de Leon landed on the coast of present-day northeastern Florida and was credited with its discovery *(29)*. He named the land La Florida for Pascua Florida, Spain's Feast of the Flowers at Easter. In 1564, French Huguenots built Fort La Caroline on a high bluff along the St. Johns River *(54)*. The fort was destroyed and rebuilt by the Spanish *(17)*. The original site of La Caroline was washed away after the river channel was deepened and widened in the 1880's. A model of the fort was built at the present-day site of Fort Caroline National Memorial.

In 1763, Great Britain acquired Florida and began developing the northern part of the territory. The British changed the name of Wacca Pilatka to Cowford, which later became Jacksonville. They widened the Indian trail and developed it from south of St. Augustine to Cowford and on into Georgia. England owned Florida for 20 years. Florida was relinquished to Spain in exchange for Havana, Cuba. In 1821, Florida became a United States possession.

The first European settler on the site of present-day Jacksonville was Robert Pritchard, who arrived in 1771. The Kingsley Plantation House was built in the survey area in 1798 and is the only plantation house still standing in northeastern Florida *(10)*. In June 1822, about 250 settlers lived in the Cowford area. Isaiah D. Hart is known as the founder of Jacksonville because he headed the movement to get streets surveyed and land donated. Jacksonville was named for General Andrew Jackson. General Jackson served briefly as the provisional governor of Florida after it was ceded to the United States. In 1822, Duval County was created from part of St. Johns County and Jacksonville became the county seat. Duval County was named for William P. Duval, the first territorial governor of Florida. The City of Jacksonville was incorporated in 1832. On August 8, 1967, residents in the City of Jacksonville and Duval County voted to eliminate the city and county governments and establish one unified government. Jacksonville has more land area than any other city in the United States.

In 1828, the first steam sawmill in eastern Florida was built along the Trout River and was supported by the large amount of timber resources in the survey area. Soon afterwards, a brick kiln and a small sugar mill were built in the county. These businesses as well as cotton production improved the county's economy. The building industry was revolutionized because of the supplies of lumber and brick. In 1835, the City of Jacksonville's first bank and newspaper were established. In 1850, there were seven sawmills along the St. Johns River between downtown Jacksonville and Mayport. Favored by its location near the Atlantic Ocean and good access to a large agricultural and timber region, Jacksonville became an important trade center and deep water port. Steamboats began to use the port for both local and out-of-state commerce. A

stagecoach line was operated between Jacksonville and Tallahassee in the 1850's. In 1858, a railroad was built that connected St. Augustine to Tocoi, and in March 1860, the railroad reached from Jacksonville to Lake City, Florida. Street railway was first operating in Jacksonville in 1881. The first electric lights appeared in 1883. Jacksonville's first bridge across the St. Johns River, the Acosta, was completed in 1921. Its first airport opened in 1927.

When Florida became a state on March 3, 1845, there were less than 1,000 people living in Jacksonville, and in 1850, there were about 1,045. A large town fire in 1854 and a yellow fever epidemic in 1857 reduced the population. By 1860, however, the population was up to 2,118, and in 1870, it was three times as large. Much of the City of Jacksonville was destroyed during the Civil War. In 1900, Jacksonville had a population of 28,429. Jacksonville continued to grow in spite of a great fire which nearly leveled the city in 1901 *(4)*. The city is now a regional center for rail, highway, and water transportation as well as a center for financial and insurance institutions. The population of Jacksonville was 304,029 in 1950; 455,211 in 1960; 528,865 in 1970; 571,003 in 1980; and 672,971 in 1990.

Since the end of the Second World War, industrial development in the survey area has greatly increased. Machinery and transportation equipment, chemicals, bedding, fabricated metals, and construction materials are manufactured in the area. Timber and pulpwood are major products. A large part of the population is employed in construction, and many more people are employed in the shipping industry located along Jacksonville's waterfront. Community facilities have expanded rapidly since 1968. All parts of the county are adequately served by electric and telephone facilities. Natural gas is available in many places.

The Duval Soil and Water Conservation District was organized in 1953 to help landowners make the best use of their land and to develop a more prosperous and lasting agriculture.

Natural Resources

Heavy minerals have higher specific gravities than quartz, or ordinary sand. The common heavy minerals in Florida include aluminum silicates, epidote, garnet, ilmenite, leucoxene, monazite, rutile, zircon, staurolite, tourmaline, and xenotine *(18)*. These minerals are used to manufacture paint, cement, glass, electronics, and porcelain.

Sand and clayey sand cover the surface of the survey area to varying depths. Although they are presently mined to a limited extent, they could potentially be used as base material or fill material for roads.

Soil is an important resource in Duval County. Soil suitability for various uses generally is based on evaluation of soil properties. Interpretations in this soil survey show how these properties can affect the use and management of soils.

Agriculture

Corn and vegetables were the first crops grown in Duval County *(35, 36)*. Sugar cane, rice, arrowroot, potatoes, rye, and wheat were cultivated later. Cotton and wool were produced for clothing. Lumbering was an important business in the 1830's, but most of the forest resources had been exhausted by the late 1910's. Citrus production started in the 1870's and continued until the big freeze in the winter of 1895, which killed most of the trees. The turpentine industry in the county started in 1885. It began to decline in the 1920's. In 1879, the county had 1,939 acres of corn, 476 acres of sweet potatoes, 121 acres of sugar cane, 57 acres of cotton, 92 acres of rice, and 46 acres of oats. The acreage of all crops, except potatoes, decreased from 1899 to 1909. The acreage of all crops, except sugarcane and dry peas, increased from 1909 to 1919. Most farmers raised cattle and hogs on the open range, and some had dairies. In 1920, about 2.6 percent of the county was cultivated.

In 1992, Duval County had about 378 farms *(55)*. In 1992, land classified as agricultural in the county made up 281,039 acres, or about 56.6 percent of the county. Of that total, 262,713 acres was woodland, 13,056 acres was cropland, and 5,270 acres was pastureland. The average size of a farm was about 106 acres. The total acreage of farmland was 41,766. In addition to dairy, poultry, and beef sales, farmers in Duval County produce small amounts of corn and tobacco. Forest land makes up 262,713 acres, or about 52.9 percent of the county *(38)*. It includes public land, commercial and privately owned woodland, and woodland owned by the forest industry.

Archeology

Lynn Nidy, field archaeologist, Florida Division of Archives and History, helped prepare this section.

Soil properties undoubtedly influenced the selection of settlement sites by humans. Factors such as wetness, flooding, slope, permeability, and fertility for crop production were important criteria in site selection. The early inhabitants of the survey area had a limited knowledge of soils and a limited ability to

alter the soil and so had to use the soil primarily as it was.

Inhabitants in the survey area were probably at one time hunters and gatherers, that is, they did not plant crops but gathered wild plants and hunted game. Even their subsistence practices, however, were indirectly influenced by soil distribution and its relationship to the environment. Soils influence the kind and amount of vegetation and the amount of available water and thus indirectly influence the kind of wildlife that inhabit an area.

Archeological site distribution in the survey area is closely related to topography and soil distribution. The topography in Duval County is mostly low and gentle to flat and is composed of a series of ancient marine terraces *(15)*. The highest altitude, about 190 feet above sea level, is in the extreme southwestern corner of the county, along the eastern slope of the prominent topographic feature known as Trail Ridge. Trail Ridge is a remnant of the highest ancient marine terrace (the Coharie Terrace) in the survey area. The terraces are parallel to the present-day Atlantic shoreline and become progressively higher in elevation from east to west.

There are 36 large ceremonial sites recorded to date in the county, 35 of which occur on moderately well drained to excessively drained soils. Moderately well drained to excessively drained soils, such as Ortega, Kureb, Kershaw, Cornelia, and Blanton soils, are located on the higher parts of individual marine terraces. Of the total 150 archaeological sites recognized in the county, only those directly related to marine food acquisition are located on very poorly drained soils, such as Tisonia and Maurepas soils.

Many of the soils related to marine food acquisition have been modified by humans. Human inhabitation of sites has actually created fertile soils. Sites in areas of soils that were originally low, wet, poorly drained, unproductive sandy soils were developed because of easily exploited abundant food sources. Today, because of midden accumulation, these areas are higher than the surrounding areas. The soils are better drained and more fertile. The areas are quite visible on aerial photographs because of the different vegetation in surrounding areas.

The relationship of the settlement of an area to good farming lands is clearly indicated by the locations of early plantations. Generally, the plantations were located on prehistoric Indian sites. The Greenfield, Fitzpatrick, Kingsley, and Houston Plantations are examples.

The first European settlers in the survey area lived on the high ridges along the south bank of the St. Johns River and on the islands around the river's mouth. The early settlements, except for sawmill grants in the interior of the county, were on moderately well drained to excessively drained soils.

An important exception to this settlement trend was the settlement of an area on the northwestern bank of the St. Johns River in the late 18th century. This settlement, once known as Cowford, eventually became the City of Jacksonville. Because the St. Johns River is narrowest in this area, the area was a popular fording point.

Transportation Facilities

Duval County is served by a good transportation network. Interstate Highways 10, 95, and 295 and U.S. Highways 1, 17, 23, and 90 traverse the county and provide ready access to population centers within the county and the state. In addition, Jacksonville is a rail center and the headquarters of one of the major railroads. A modern system of bridges crosses the St. Johns, Broward, Trout, and Ortega Rivers in several locations. Airline service, both commercial and private, and rail and bus service are available. The Intercoastal Waterway provides an inland water route through the county. Blount Island, Dames Point, Eastport, and downtown Jacksonville are deep water ports for commercial ships. The U.S. Naval Station in Mayport has a deep water basin where naval vessels dock.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; and the kinds of crops and native plants. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific

segments of the landform, a soil scientist develops a concept or model of how they formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, distribution of plant roots, reaction, and other features that enable them to identify the soils. After describing the soils and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. The data from these analyses and tests and from field-observed characteristics and soil properties are used to predict behavior of the soils under different uses. Interpretations are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a relatively high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Use of Ground-Penetrating Radar

In Duval County, the results of a ground-penetrating radar (GPR) system *(12, 13, 21, 27)* and hand transects conducted in Nassau County were used to document the variability of the soil in the detailed soil map units. The geomorphology of Nassau County is very similar to that of Duval County, and the counties have many of the same map units.

Survey Procedures

This survey updates the soil survey of the City of Jacksonville, Duval County, Florida, published in 1978 *(46)*. It provides additional data and soil interpretations. The scale of the maps in this soil survey is 1:24,000 whereas it was 1:20,000 in the 1978 soil survey. Because more soil series have been established since 1978, the soils are shown in greater detail in this survey.

The general procedures followed in making the survey are described in the "National Soil Survey Handbook" of the Natural Resources Conservation Service and in the "Soil Survey Manual" *(40, 51)*. The maps and soil descriptions in the previous soil survey were used as a reference.

Before the fieldwork began, black-and-white aerial photographs taken in January 1952 at a scale of 1:20,000 and infrared photographs taken in the spring of 1983 and the spring of 1984 at a scale of 1:24,000

were studied. Soil scientists studied United States Geological Survey topographic maps at a scale of 1:24,000 to relate land and image features.

Reconnaissance was made by vehicle before the landscape was traversed on foot. Most areas required remapping. The 1952 black-and-white photographs show many areas supporting natural vegetation that were later cleared and used for planted pine plantations or urban development, or both. Landforms are easier to differentiate in areas of natural vegetation, and most soils can be correlated to certain landforms. Areas of hydric soils can be seen using the 1983 and 1984 infrared photographs.

Several soils have been established since the previous soil survey. For example, areas mapped as Pottsburg soils in the 1978 survey include Pottsburg, Pottsburg, high, and Hurricane soils in this soil survey because soil boundary lines were adjusted throughout the county. Traverses generally were made at intervals of about 1/4 mile. They were made at closer intervals in complex areas of high variability and at wider intervals in less complex areas of low variability.

Chemical, physical, mineralogical, and engineering test data from the 1978 soil survey and the soil survey of Nassau County were used in this soil survey *(46, 50)*.

General Soil Map Units

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern. A slash separating two soil names in the name of a general soil map unit indicates that areas of the two soils are considered as a collective acreage.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Soils on Dunes, on Rises, on Knolls, and in Flatwoods

The three general soil map units in this group consist of nearly level to sloping and gently undulating to hilly, excessively drained to poorly drained soils that are sandy to a depth of 80 inches or more. These map units occur in the eastern part of the county and along the St. Johns River.

1. Fripp-Corolla-Mandarin

Nearly level to hilly, excessively drained, moderately well drained, and somewhat poorly drained, sandy soils; in high landscape positions

The soils in this map unit are on dunes and in flatwoods. The dunes are elongated, generally oriented north to south along their long axis and parallel to the ocean coast. The primary dunes are adjacent to the ocean beach, and the relict beach dunes are farther inland. The height of the dunes ranges from 4 to 15 feet, and the slope generally is 8 to 100 feet or more in length. Slopes are concave and convex. Individual areas of this map unit are elongated and relatively small in size.

This map unit makes up about 1,985 acres, or 0.4 percent of the county. It is about 34 percent Fripp soils, 25 percent Corolla soils, 14 percent Mandarin soils, and 27 percent soils of minor extent (fig. 2).

The Fripp soils are excessively drained, occur on gently undulating to hilly dunes, and are vegetated with trees. The surface layer is grayish brown fine sand about 6 inches thick. The underlying material, to a depth of 80 inches or more, is very pale brown fine sand that contains horizontal bands of black heavy minerals.

The Corolla soils are somewhat poorly drained and moderately well drained, occur on gently undulating to rolling dunes, are affected by salt spray in areas near the Atlantic Ocean, and do not have trees. The surface layer is very pale brown fine sand about 6 inches thick. The underlying material, to a depth of 80 inches or more, is fine sand that has common very pale brown shell fragments and horizontal bands of black minerals. The upper 20 inches of this material is pale brown and light yellowish brown, and below this the material is light gray.

The Mandarin soils are somewhat poorly drained and occur in the slightly elevated, nearly level flatwoods. These soils generally are west of the beaches. The surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is fine sand about 22 inches thick. It is light brownish gray in the upper 4 inches and light gray in the lower 18 inches. The subsoil is dark organic stained fine sand that extends to a depth of 46 inches. The sand grains are coated with organic matter. The subsoil is very dark grayish brown between depths of 26 and 30 inches, very dark brown between depths of 30 and 35 inches, black between depths of 35 and 40 inches, and brown between depths of 40 and 46 inches. Below this is light gray fine sand 10 inches thick, white fine sand 6 inches thick, and grayish brown fine sand 11 inches thick. Between depths of 73 and 80 inches is fine sand that is weakly cemented, black, and coated with organic matter.

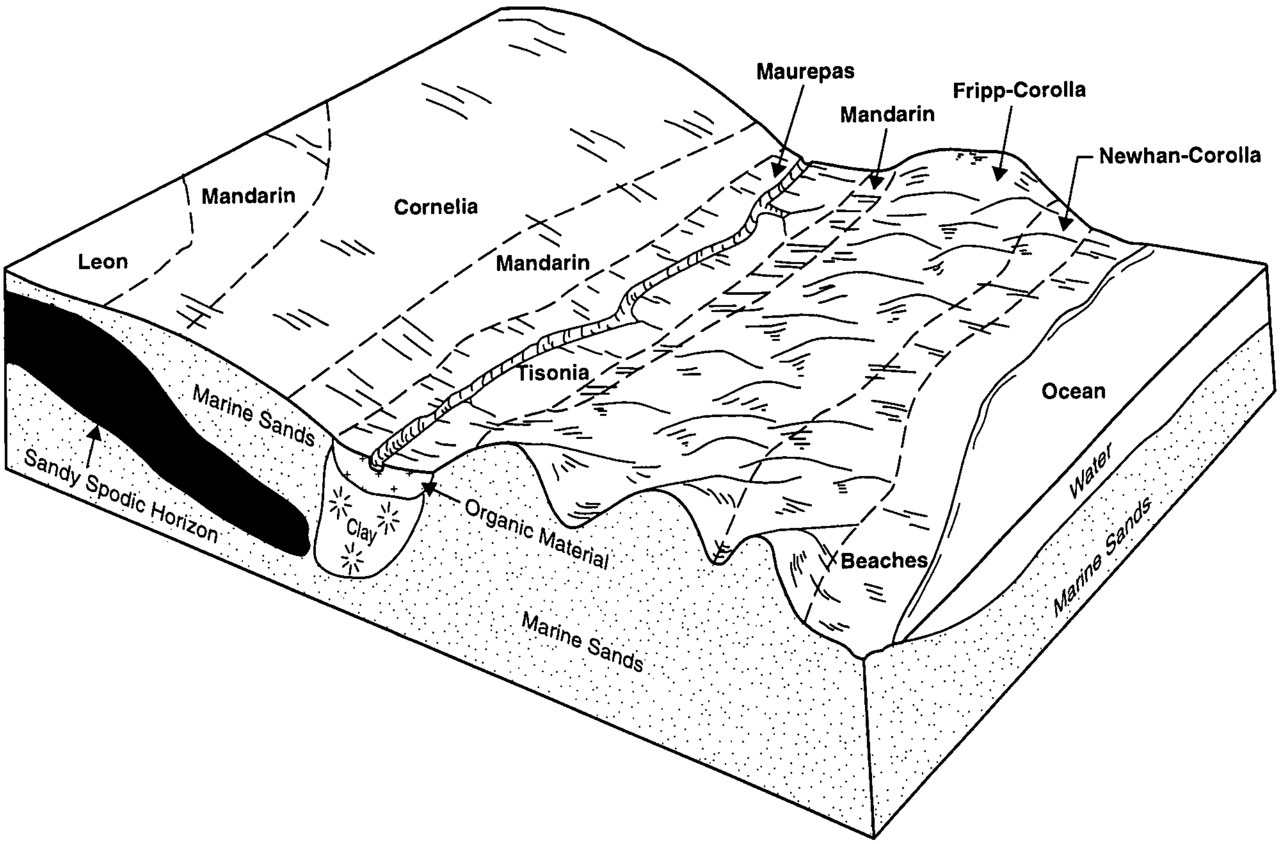


Figure 2.—Typical pattern of soils and parent material in an area of the Fripp-Corolla-Mandarin, Cornelia-Mandarin-Leon, and Tisonia-Maurepas general soil map units. The soils of these map units support native vegetation.

Of minor extent in this map unit are Kureb, Leon, Newhan, and Tisonia soils. Kureb and Newhan soils are excessively drained. Kureb soils are on dunes and rises. Newhan soils are on dunes, are affected by salt spray, and do not have trees. Leon and Tisonia soils are very poorly drained and in tidal marshes.

This map unit is located on Little Talbot Island and supports native vegetation. The natural vegetation consists of live oak and water oak. The understory includes saw palmetto, yaupon, wiregrass, and seaoats.

2. Cornelia-Mandarin-Leon

Nearly level and gently sloping, excessively drained and somewhat poorly drained to very poorly drained, sandy soils; in low to high landscape positions

The soils in this map unit are on rises and in flatwoods. The map unit occurs on Talbot Island and Fort George Island in the eastern part of the county.

This map unit makes up about 2,990 acres, or 0.6 percent of the county. It is about 31 percent Cornelia soils, 25 percent Mandarin soils, 16 percent Leon soils, and 28 percent soils of minor extent (fig. 2).

The Cornelia soils are somewhat excessively drained and occur on nearly level and gently sloping rises. The surface layer is very dark gray fine sand about 7 inches thick. The subsurface layer is fine sand about 32 inches thick. It is gray in the upper 6 inches and white in the lower 26 inches. The subsoil extends to a depth of 106 inches. It is dark organic stained fine sand that is coated with organic matter. The subsoil is dark reddish brown between depths of 39 and 53 inches, dark yellowish brown between depths of 53 and 73 inches, dark brown between depths of 73 and 92 inches, and reddish brown between depths of 92 and 106 inches.

The Mandarin soils are somewhat poorly drained and occur in the nearly level, slightly elevated flatwoods. The surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is fine sand about 22 inches thick. It is light brownish gray in the upper 4 inches and light gray in the lower 18 inches. The subsoil extends to a depth of 46 inches. It is dark organic stained fine sand. It is well coated with organic

matter, except in the lower 6 inches. The subsoil is very dark grayish brown between depths of 26 and 30 inches, very dark brown between depths of 30 and 35 inches, black between depths of 35 and 40 inches, and brown between depths of 40 and 46 inches. Below this is light gray fine sand 10 inches thick, white fine sand 6 inches thick, and grayish brown fine sand 11 inches thick. Between depths of 73 and 80 inches is black fine sand that is coated with organic matter.

The Leon soils are poorly drained and occur in nearly level flatwoods. The surface layer is fine sand about 8 inches thick. It is very dark gray in the upper 5 inches and dark gray in the lower 3 inches. The subsurface layer is gray fine sand about 10 inches thick. The subsoil extends to a depth of more than 80 inches. It is dark organic stained fine sand. It is black between depths of 18 and 26 inches, very dark gray between depths of 26 and 37 inches, dark brown between depths of 37 and 45 inches, and dark reddish brown between depths of 45 and 80 inches.

Of minor extent in this map unit are Albany, Evergreen, Hurricane, Lynn Haven, Kureb, Pottsburg, Pottsburg, high, Ridgewood, Ortega, Tisonia, and Wesconnett soils. Albany, Hurricane, Pottsburg, high, Ridgewood, and Ortega soils are on rises and knolls. Albany soils have a loamy subsoil. Ortega soils are moderately well drained. Hurricane and Pottsburg soils have a dark organic stained subsoil below a depth of 50 inches. Ridgewood and Ortega soils are sandy throughout. Evergreen and Wesconnett soils are very poorly drained and are in depressions. Lynn Haven soils are poorly drained and are on flats. Kureb soils are excessively drained and on dunes. Tisonia soils are very poorly drained and in tidal marshes.

The soils in this map unit mainly support natural vegetation. In some areas they have been used for urban development. The natural vegetation consists of slash pine, longleaf pine, water oak, and live oak. The understory includes saw palmetto and pineland threeawn.

3. Ortega-Kershaw-Penney

Nearly level to sloping, moderately well drained and excessively drained, sandy soils; in high landscape positions

The soils in this map unit are on rises and knolls. The map unit is in the eastern part of the county and near the St. Johns River. Individual mapped areas are irregular in shape or elongated and are small to relatively large in size.

This map unit makes up about 8,100 acres, or 1.6 percent of the county. It is about 32 percent Ortega soils, 30 percent Kershaw soils, 11 percent Penney soils, and 27 percent soils of minor extent.

The Ortega soils are moderately well drained and occur on nearly level and gently sloping rises and knolls. The surface layer is grayish brown fine sand about 5 inches thick. Below this, to a depth of 48 inches, is very pale brown fine sand. The next layer is fine sand that is white to a depth of 63 inches and very pale brown sand between depths of 63 and 80 inches or more.

The Kershaw soils are excessively drained and occur on nearly level to sloping rises. The surface layer is very dark gray fine sand about 3 inches thick. The next layer extends to a depth of 51 inches. It is light yellowish brown fine sand. Below this, to a depth of 80 inches or more, is a layer of brownish yellow fine sand.

The Penney soils are excessively drained and occur on nearly level and gently sloping rises. The surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer extends to a depth of 48 inches. It is light yellowish brown and very pale brown fine sand. The next layer extends to a depth of 80 inches or more. It is very pale brown and white fine sand that contains bands of strong brown loamy fine sand.

Of minor extent in this map unit are Albany, Blanton, Boulogne, Evergreen, Goldhead, Hurricane, Leon, Lynn Haven, Kureb, Mandarin, Maurepas, Pottsburg, Pottsburg, high, Ridgewood, Rutlege, and Wesconnett soils. Albany, Blanton, Hurricane, Kureb, Pottsburg, high, and Ridgewood soils are on rises and knolls. Albany and Blanton soils have a loamy subsoil. Albany soils are somewhat poorly drained, and Blanton soils are moderately well drained. Hurricane soils are somewhat poorly drained and have a dark organic stained subsoil below a depth of 50 inches. Kureb soils are excessively drained, have an eluvial layer, have a bright-colored subsoil, and are sandy throughout. Pottsburg, high, soils are somewhat poorly drained and have a deep, organic stained subsoil. Ridgewood soils are somewhat poorly drained and are sandy throughout. Boulogne, Leon, and Mandarin soils have an upper, dark organic stained subsoil. Boulogne and Leon soils are in flatwoods and are poorly drained. Mandarin soils are in the slightly elevated flatwoods and are somewhat poorly drained. Evergreen and Wesconnett soils are very poorly drained and in depressions. Lynn Haven soils are very poorly drained and on flats and in seep areas on side slopes. Goldhead soils are poorly drained and in seep areas on side slopes. Maurepas and Rutlege soils are very poorly drained and on flood plains. Pottsburg soils are poorly drained and in flatwoods. They have a deep, organic stained subsoil.

In most areas the soils in this map unit are used for urban development.

The natural vegetation consists of longleaf pine, slash pine, turkey oak, bluejack oak, and live oak. The understory includes American holly, saw palmetto, pineland threeawn, and bluestem.

Soils on Flats, in Flatwoods, in Depressions, on Rises, and on Knolls

The three general soil map units in this group consist of nearly level and gently sloping, moderately well drained to very poorly drained, sandy soils that generally have a dark organic stained sandy subsoil within a depth of 30 inches. Some of the soils have a dark organic stained sandy subsoil below a depth of 30 inches, and some have a loamy subsoil that may have a dark organic stained upper part. These map units occur in areas throughout the county.

4. Leon-Hurricane/Ridgewood-Ortega

Nearly level and gently sloping, very poorly drained to moderately well drained, sandy soils; in low to high landscape positions

The soils in this map unit are in flatwoods that are interspersed with rises and knolls. The map unit is generally in the southeastern part of the county. Individual mapped areas are generally elongated and are small or medium in size.

This map unit makes up about 36,270 acres, or 7.3 percent of the county. It is about 21 percent Leon soils, 16 percent Hurricane and the similar Ridgewood soils, 10 percent Ortega soils, and 53 percent soils of minor extent (fig. 3).

The Leon soils are poorly drained and occur in nearly level flatwoods. The surface layer is fine sand about 8 inches thick. It is very dark gray in the upper 5 inches and dark gray in the lower 3 inches. The subsurface layer is gray fine sand about 10 inches thick. The subsoil is dark organic stained fine sand that is coated with organic matter. It extends to a depth of more than 80 inches. Is is black between depths of 18 and 26 inches, very dark gray between depths of 26 and 37 inches, dark brown between depths of 37 and 45 inches, and dark reddish brown between depths of 45 and 80 inches.

The Hurricane soils are somewhat poorly drained and occur on nearly level and gently sloping rises and knolls. The surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer is fine sand. It extends to a depth of about 68 inches. It is yellowish brown in the upper part, light yellowish brown in the next part, and light gray in the lower part. The subsoil extends to a depth of 80 inches or more. It is dark organic stained fine sand. It is dark brown in the upper part and dark reddish brown in the lower part.

The Ridgewood soils are somewhat poorly drained and occur on nearly level and gently sloping rises and knolls. The surface layer is gray fine sand about 7 inches thick. The substratum extends to a depth of 80 inches or more. It is fine sand that is light yellowish brown in the upper part and pale brown and light gray in the lower part.

The Ortega soils are moderately well drained and occur on nearly level and gently sloping rises and knolls. The surface layer is grayish brown fine sand about 5 inches thick. Below this, to a depth of 48 inches, is very pale brown fine sand. The next layer is white fine sand 15 inches thick. Below this is a layer of very pale brown fine sand that extends to a depth of 80 inches or more.

Of minor extent in this map unit are Albany, Blanton, Boulogne, Dorovan, Evergreen, Lynn Haven, Kershaw, Mandarin, Pamlico, Pottsburg, high, Ridgewood, Rutlege, Surrency, Tisonia, and Wesconnett soils. Albany, Blanton, Kershaw, Pottsburg, high, and Ridgewood soils are on rises and knolls. Albany soils are somewhat poorly drained. Blanton soils are moderately well drained to somewhat excessively drained. Albany and Blanton soils have a loamy subsoil. Kershaw soils are excessively drained. Ridgewood soils are somewhat poorly drained. Kershaw and Ridgewood soils are sandy throughout. Pottsburg, high, soils are somewhat poorly drained and have an organic stained subsoil below a depth of 50 inches. Boulogne soils are poorly drained and in flatwoods. They have an upper, weakly developed, organic stained subsoil. Dorovan, Evergreen, Pamlico, Surrency, and Wesconnett soils are poorly drained and in depressions. Pamlico and Surrency soils also are on flood plains. Lynn Haven soils are very poorly drained and on flats. Mandarin soils are somewhat poorly drained and in the slightly elevated flatwoods. They have a dark organic stained subsoil within a depth of 30 inches. Rutlege soils are very poorly drained and on flood plains. Tisonia soils are very poorly drained and organic and are in tidal marshes.

The soils in this map unit are mainly used for urban development. In some cleared areas they are used as pasture. A small acreage is used as woodland.

The natural vegetation in the flatwoods consists of slash pine and an understory of saw palmetto, gallberry, and pineland threeawn. The natural vegetation on the rises consists of longleaf pine, slash

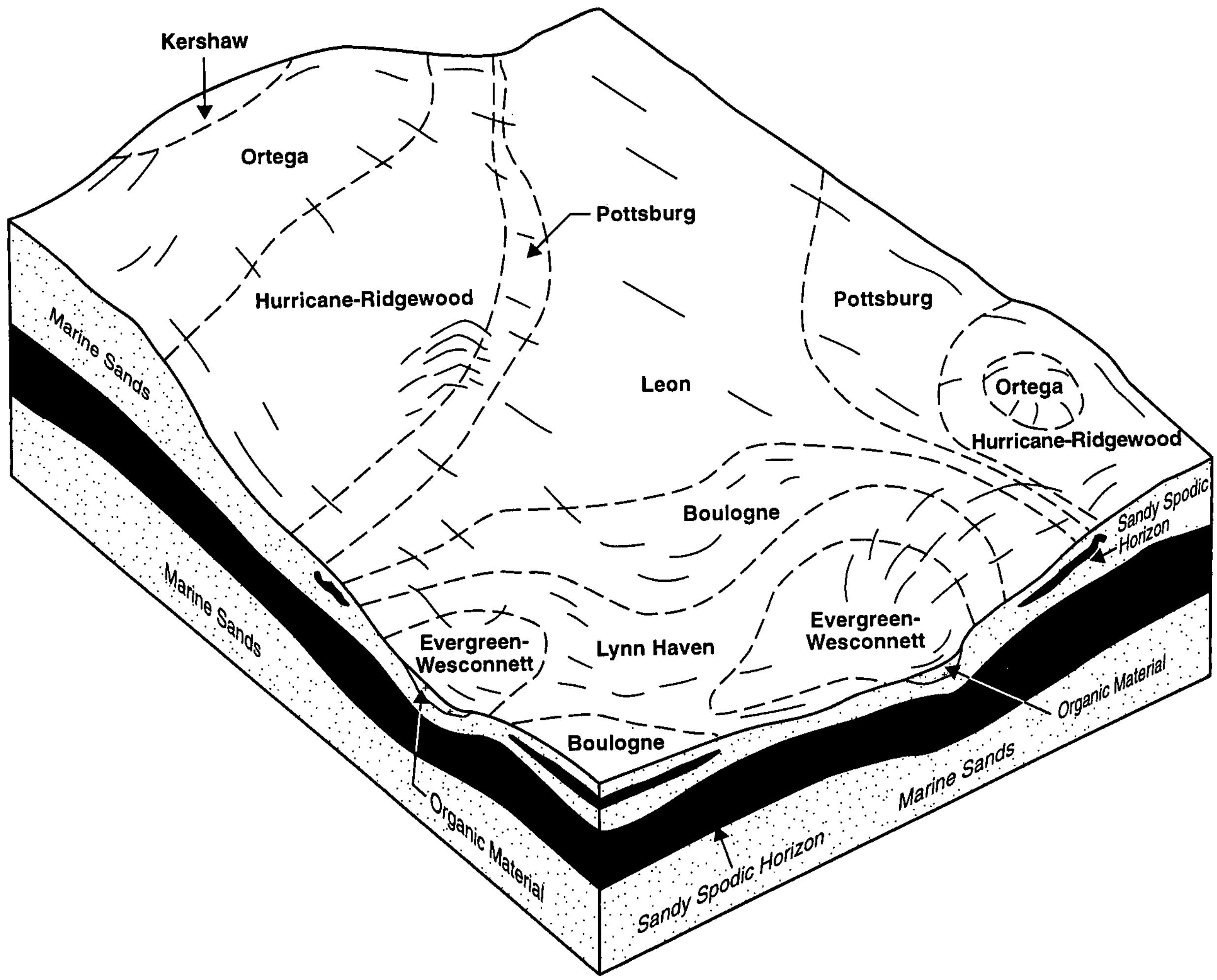


Figure 3.—Typical pattern of soils and parent material in an area of the Leon-Hurricane/Ridgewood-Ortega general soil map unit. This map unit is dominantly used for urban development.

pine, water oak, turkey oak, and live oak and an understory of gallberry, pineland threeawn, and bluestem.

5. Leon-Boulogne-Evergreen/ Wesconnett

Nearly level, poorly drained and very poorly drained soils that are sandy throughout; in low landscape positions

The soils in this map unit are in flatwoods that are interspersed with depressions. The map unit is in the eastern and western parts of the county. Individual mapped areas vary in shape and size.

This map unit makes up about 212,050 acres, or 42.7 percent of the county. It is about 30 percent Leon soils, 14 percent Boulogne soils, 12 percent Evergreen and the similar Wesconnett soils, and 44 percent soils of minor extent (fig. 4).

The Leon soils are poorly drained and occur in nearly level flatwoods. The surface layer is fine sand about 8 inches thick. It is very dark gray in the upper 5 inches and dark gray in the lower 3 inches. The subsurface layer is gray fine sand about 10 inches thick. The subsoil extends to a depth of more than 80 inches. It is dark organic stained fine sand that is coated with organic matter. It is black between depths of 18 and 26 inches, very dark gray between depths of 26 and 37 inches, dark brown between depths of 37 and 45 inches, and dark reddish brown between depths of 45 and 80 inches.

The Boulogne soils are poorly drained and occur in nearly level flatwoods. The surface layer is very dark

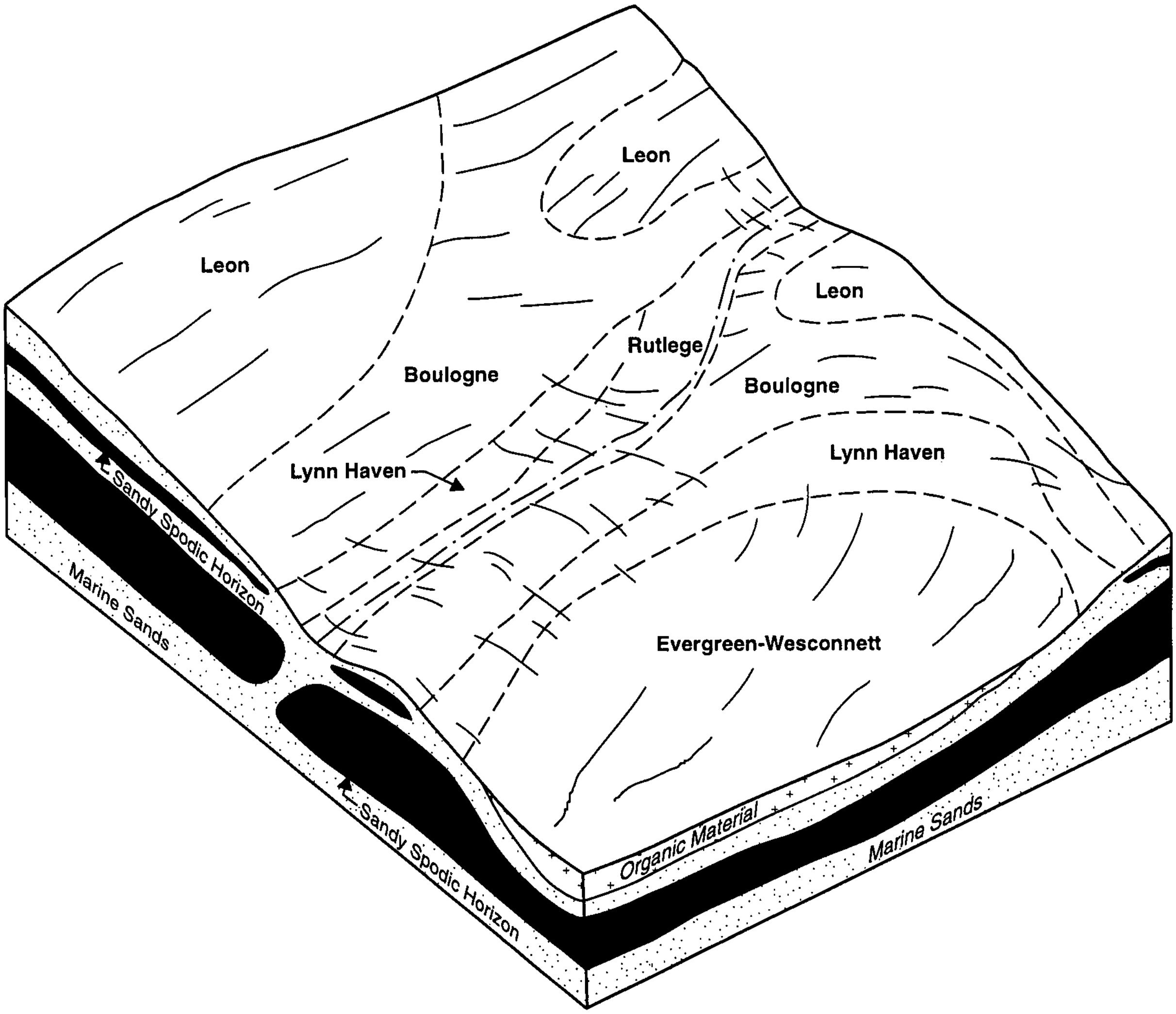


Figure 4.—Typical pattern of soils and parent material in an area of the Leon-Boulogne-Evergreen/Wesconnett general soil map unit. Soils of this map unit are dominantly used for the production of pine trees. In the eastern part of the county, many areas are used for urban development.

gray fine sand about 6 inches thick. The upper 10 inches of the subsoil is weakly developed, dark organic stained, brown fine sand that is coated with organic matter. The next 15 inches is very pale brown fine sand. The lower part of the subsoil, to a depth of 80 inches, is dark organic stained fine sand that is coated with organic matter. This part is dark reddish brown to a depth of 39 inches and black below this depth.

The Evergreen soils are very poorly drained and occur in nearly level depressions. The surface layer is black muck in the upper part, black loamy fine sand in the next part, and very dark gray fine sand in the lower part. The subsurface layer extends to a depth of about 26 inches. It is light brownish gray fine sand. The subsoil extends to a depth of about 80 inches. It is dark organic stained. It is dark reddish brown loamy fine sand in the upper part and dark reddish brown fine sand in the lower part.

The Wesconnett soils are very poorly drained and occur in nearly level depressions. The surface layer is black fine sand about 2 inches thick. The upper part of the subsoil, between depths of 2 and 32 inches, is fine sand. This part is black in the upper 8 inches, dark reddish brown in the next 16 inches, and dark brown in the lower 6 inches. Below this is a layer of pale brown fine sand about 12 inches thick. The lower part of the subsoil, between depths of 44 and 80 inches, is fine

sand. The sand grains are well coated with organic matter. This part is reddish black in the upper 28 inches and very dusky red in the lower 8 inches.

Of minor extent in this map unit are Hurricane, Lynn Haven, Mandarin, Ortega, Pamlico, Pottsburg, Pottsburg, high, Ridgewood, Rutlege, Tisonia, and Wesconnett soils. Hurricane, Ortega, Pottsburg, high, and Ridgewood soils are on rises and knolls. Hurricane, Pottsburg, high, and Ridgewood soils are somewhat poorly drained. Ortega soils are moderately well drained. Lynn Haven soils are very poorly drained and on flats. Mandarin soils are in the slightly elevated flatwoods and are somewhat poorly drained. Pamlico soils are very poorly drained and on flood plains and in depressions. Rutlege soils are very poorly drained and on flood plains. Wesconnett soils are in depressions. Pottsburg soils are poorly drained and in flatwoods. They have a dark organic stained subsoil below a depth of 50 inches. Tisonia soils are very poorly drained and organic and are in tidal marshes.

The soils in this map unit are used as woodland. In most cleared areas they are used as pasture. In some areas they are used for urban development.

The natural vegetation in the flatwoods consists of longleaf pine and slash pine and an understory of saw palmetto, gallberry, pineland threeawn, and bluestem. The natural vegetation in the depressions consists dominantly of pond pine, cypress, red maple, and an understory of wax myrtle, water-tolerant ferns, grasses, and greenbrier.

6. Pelham-Mascotte/Sapelo-Surrency

Nearly level, poorly drained and very poorly drained soils that are sandy in the upper part and loamy or sandy in the lower part; in low landscape positions

The soils in this map unit are in flatwoods that are interspersed with flats, depressions, and flood plains. Areas of this map unit occur in the western and central parts of the county. Individual mapped areas vary in shape and size.

This map unit makes up about 152,065 acres, or 30.6 percent of the county. It is about 34 percent Pelham soils, 32 percent Mascotte and the similar Sapelo soils, 11 percent Surrency soils, and 23 percent soils of minor extent (fig. 5).

The Pelham soils are poorly drained and occur on nearly level flats. The surface layer is very dark gray fine sand about 6 inches thick. The subsurface layer is fine sand about 15 inches thick. It is grayish brown in the upper 8 inches and light gray in the lower 7 inches. The subsoil is between depths of 21 and 80 inches. It is light brownish gray fine sandy loam in the upper 5 inches, light brownish gray sandy clay loam in the next 34 inches, and light brownish gray fine sandy loam in the lower part.

The Mascotte soils are poorly drained and occur in nearly level flatwoods. The surface layer is black fine sand about 5 inches thick. The subsurface layer is fine sand about 10 inches thick. It is gray in the upper 3 inches and light brownish gray in the lower 7 inches. The upper part of the subsoil is dark organic stained loamy fine sand that is coated with organic matter. This part is black in the upper 6 inches, very dusky red in the next 2 inches, and dark reddish brown in the lower 2 inches. Below this is a layer of light gray and dark brown loamy fine sand about 3 inches thick. The lower part of the subsoil, between depths of 28 and 58 inches, is coarsely mottled gray and yellowish red sandy clay loam in the upper 18 inches and coarsely mottled light gray, strong brown, and red fine sandy loam in the lower 12 inches. Below this, to a depth of 80 inches, is gray fine sand.

The Sapelo soils are poorly drained and occur in nearly level flatwoods. The surface layer is black and dark gray fine sand about 6 inches thick. The subsurface layer is light brownish gray fine sand about 23 inches thick. The upper part of the subsoil is dark organic stained fine sand that is coated with organic matter. It is black and dark reddish brown in the upper 15 inches, black, dark reddish brown, and very dusty red in the next 2 inches, and dark brown in the lower 6 inches. Below this, to a depth of 56 inches, is a layer of very pale brown fine sand. The lower part of the subsoil, between depths of 56 and 80 inches or more, is gray sandy clay loam in the upper 6 inches and gray fine sandy loam in the lower 24 inches.

The Surrency soils are very poorly drained and occur in nearly level depressions and on flood plains. The surface layer is about 18 inches thick. It is black loamy fine sand in the upper 14 inches and dark brown fine sand in the lower 4 inches. The subsurface layer is light brownish gray fine sand about 8 inches thick. The subsoil occurs between depths of 26 and 70 inches. It is fine sandy loam. It is dark grayish brown in the upper 12 inches, dark gray in the next 11 inches, and greenish gray in the lower 21 inches. Below this, to a depth of 80 inches or more, is greenish gray sandy clay loam.

Of minor extent in this map unit are Albany, Lynchburg, Pamlico, Stockade, Yonges, and Yulee soils. Albany and Lynchburg soils are somewhat poorly drained and are on rises and knolls. Pamlico and Yulee soils are very poorly drained and are in

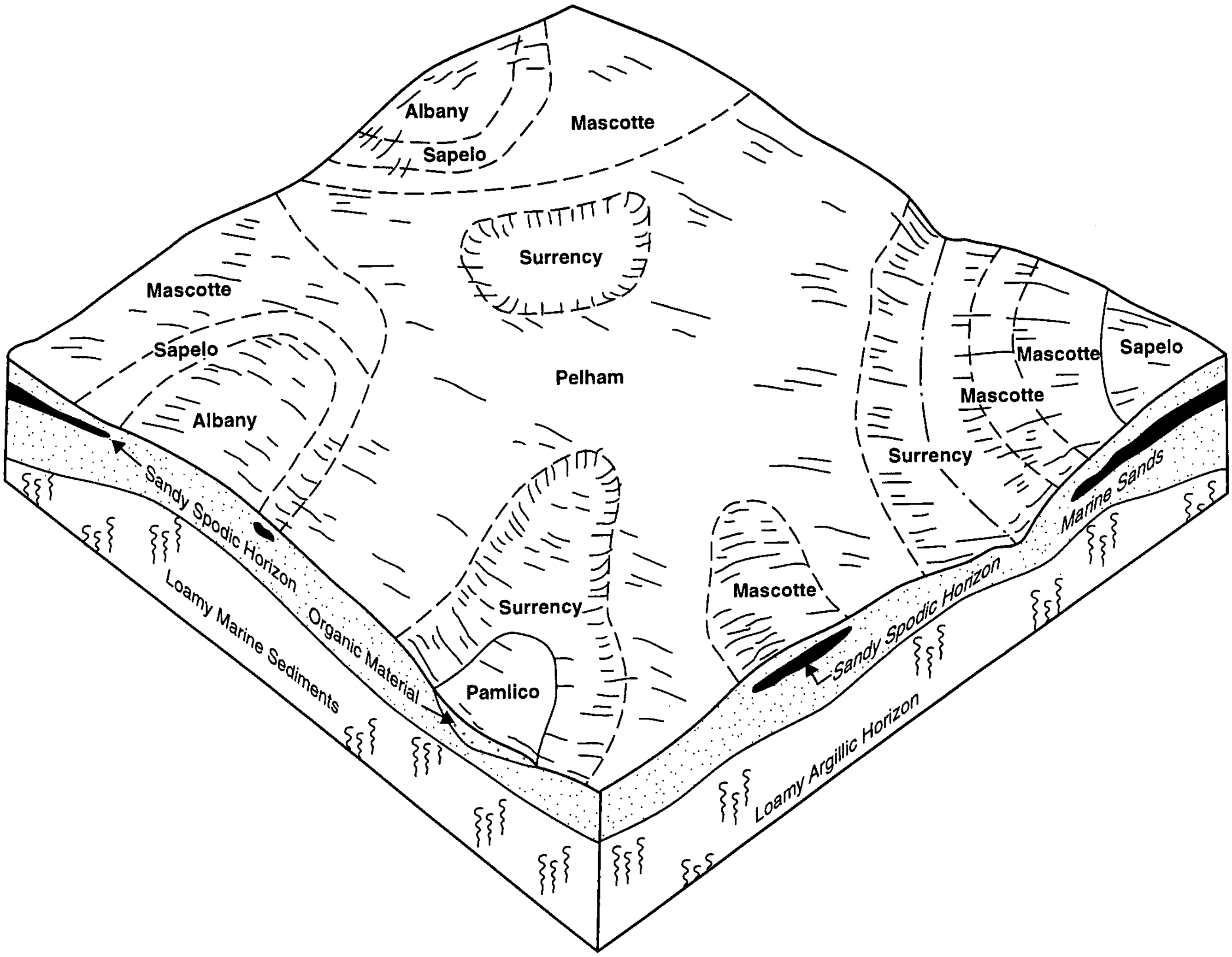


Figure 5.—Typical pattern of soils and parent material in an area of the Pelham-Mascotte/Sapelo-Surrency general soil map unit. Soils of this map unit are dominantly used for the production of pine trees. In the central part of the county, many areas are used for urban development.

depressions and on flood plains. Stockade soils are very poorly drained and in depressions. Pamlico soils are organic, Stockade soils have a loamy subsoil with high base saturation, and Yulee soils are clayey. Yonges soils are poorly drained and on flats. They have a loamy subsoil within a depth of 20 inches.

The soils in this map unit generally are used for woodland. In most cleared areas they are used as pasture. In some areas they are used for urban development.

The natural vegetation in the flatwoods consists of mixed longleaf pine and slash pine and an understory dominantly consisting of saw palmetto, gallberry, pineland threeawn, and bluestem. The natural vegetation in the depressions is cypress, pond pine, red maple, ferns, and sweetgum and an understory of wax myrtle, water-tolerant ferns, and grasses.

Soils in Depressions, on Flats, on Flood Plains, and in Tidal Marshes

The three general soil map units in this group consist of nearly level, poorly drained and very poorly drained soils. Some of the soils have a clayey subsoil within a depth of 20 inches, some are sandy and have a loamy subsoil between depths of 20 and 40 inches, some have an organic layer that is 40 to more than 50 inches thick, and some are saline or slightly saline, organic soils. These map units occur in areas throughout the county.

7. Stockade-Surrency-Pamlico

Nearly level, very poorly drained soils that are sandy or have organic materials in the upper part and are loamy in the lower part; in low landscape positions

The soils in this map unit are in depressions in flatwoods. They occur throughout the county. The soils are ponded for long periods.

This map unit makes up about 27,333 acres, or 5.5 percent of the county. It is about 20 percent Stockade soils, 18 percent Surrency soils, 15 percent Pamlico soils, and 47 percent soils of minor extent.

The Stockade soils are very poorly drained and occur in nearly level depressions. The surface layer is black fine sandy loam about 12 inches thick. The subsoil occurs between depths of 12 and 46 inches. It is sandy clay loam. It is very dark gray in the upper 14 inches and dark gray in the lower 20 inches. Below this, to a depth of 65 inches or more, is dark grayish brown and light brownish gray fine sand.

The Surrency soils are very poorly drained and occur in nearly level depressions and on flood plains. The surface layer is about 18 inches thick. It is loamy fine sand in the upper 14 inches and dark brown fine sand in the lower 4 inches. The subsurface layer is light brownish gray fine sand about 8 inches thick. The subsoil occurs between depths of 26 and 70 inches. It is fine sandy loam. It is dark grayish brown in the upper 12 inches, dark gray in the next 11 inches, and greenish gray in the lower 21 inches. Below this, to a depth of 80 inches or more, is greenish gray sandy clay loam.

The Pamlico soils are very poorly drained and occur in nearly level depressions and on flood plains. The surface layer is black, well decomposed muck about 6 inches thick. It overlies 24 inches of very dusky red muck. Below this is a layer of dark brown muck that extends to a depth of 35 inches. The next layer is very dark grayish brown fine sand about 25 inches thick. Below this, to a depth of 80 inches or more, is a layer of dark brown fine sand.

Of minor extent in this map unit are Boulogne, Dorovan, Evergreen, Leon, Lynn Haven, Pelham, Mascotte, Maurepas, Sapelo, and Wesconnett soils. Boulogne, Leon, Mascotte, and Sapelo soils are poorly drained and in flatwoods. Dorovan and Maurepas soils are very poorly drained and organic and are in depressions. Evergreen and Wesconnett soils are very poorly drained and in depressions. Evergreen soils have organic material 8 to 16 inches thick. Lynn Haven soils are very poorly drained and on flats. Evergreen, Lynn Haven, and Wesconnett soils have a dark organic stained subsoil. Pelham soils are poorly drained and on flats.

The soils in this map unit support natural vegetation. They are used mainly as wildlife habitat. The natural vegetation in the depressions and on the flood plains consists of water tupelo, sweetgum, bay, baldcypress, and pond pine. The understory includes greenbrier, fetterbush, aster, and willow.

8. Yulee-Yonges-Surrency

Nearly level, poorly drained and very poorly drained soils; in very low landscape positions

The soils in this map unit are in depressions, on flats, and on flood plains. The map unit is in the central and northern parts of the county. Individual mapped areas are narrow and elongated.

This map unit makes up about 12,920 acres, or 2.6 percent of the county. It is about 47 percent Yulee soils, 22 percent Yonges soils, 19 percent Surrency soils, and 12 percent soils of minor extent.

The Yulee soils are very poorly drained and occur in depressions and on flood plains. The surface layer is black clay about 14 inches thick. The subsoil occurs between depths of 14 and 66 inches. It is sandy clay. It is very dark gray in the upper 14 inches and dark gray in the lower part. The next layer is pale yellow sandy clay loam that is about 9 inches thick. Below this, to a depth of 80 inches or more, is coarsely mottled greenish gray, dark greenish gray, and olive clay loam.

The Yonges soils are poorly drained and occur on flats. The surface layer is very dark gray fine sandy loam about 3 inches thick. The subsurface layer is gray loamy fine sand about 3 inches thick. The subsoil occurs between depths of 6 to 80 inches or more. It is sandy clay loam. It is gray between depths of 6 and 25 inches, gray and dark gray between depths of 25 and 31 inches, gray, yellowish brown, and yellow between depths of 31 and 55 inches, greenish gray between depths of 55 and 65 inches, and mixed dark greenish gray and light olive brown between depths of 65 and 80 inches.

The Surrency soils are very poorly drained and occur in depressions and on flood plains. The surface layer is about 18 inches thick. It is loamy fine sand in the upper 14 inches and dark brown fine sand in the lower 4 inches. The subsurface layer is light brownish gray fine sand about 8 inches thick. The subsoil occurs between depths of 26 and 70 inches. It is fine sandy loam. It is dark grayish brown in the upper 12 inches, dark gray in the next 11 inches, and greenish gray in the lower 21 inches. Below this, to a depth of 80 inches or more, is greenish gray sandy clay loam.

Of minor extent in this map unit are Evergreen, Lynchburg, Lynn Haven, Mascotte, Pelham, Pamlico,

Sapelo, Stockade, and Wesconnett soils. Evergreen, Pamlico, Stockade, and Wesconnett soils are very poorly drained and in depressions. Evergreen, Lynn Haven, and Wesconnett soils have a dark organic stained subsoil. Pamlico soils are organic. Stockade soils have a loamy subsoil with high base saturation. Lynchburg soils are somewhat poorly drained and on rises and knolls. They have a loamy subsoil at a depth of less than 20 inches. Lynn Haven soils are very poorly drained and on flats. Mascotte and Sapelo soils are poorly drained and in flatwoods. They have a dark organic stained subsoil overlying loamy layers. Pelham soils are poorly drained and on flats. They have a loamy subsoil at a depth of 20 to 40 inches.

The soils in this map unit support natural vegetation. The natural vegetation is dominantly baldcypress, sweetgum, blackgum, water tupelo, water oak, and pond pine.

9. Tisonia-Maurepas

Nearly level, very poorly drained, saline and slightly saline, organic soils; in very low landscape positions

The soils in this map unit are in tidal marshes and on flood plains. The map unit is in the eastern part of the county. The tidal marshes are saline in most places but are brackish in places adjacent to flood plains. These soils are flooded daily.

This map unit makes up about 43,235 acres, or 8.7 percent of the county. It is about 79 percent Tisonia soils, 10 percent Maurepas soils, and 11 percent soils of minor extent (fig. 2).

The Tisonia soils are very poorly drained and occur in tidal marshes. The surface layer is dark grayish brown mucky peat about 18 inches thick. The underlying material, to a depth of about 65 inches, is dark olive gray clay.

The Maurepas soils are very poorly drained and occur on flood plains that are influenced by tidal action. The surface layer is dark reddish brown muck about 55 inches thick. Below this is a layer of black muck that extends to a depth of 80 inches or more.

Of minor extent in this map unit are Boulogne, Leon, and Lynn Haven soils. These soils have a dark organic stained subsoil. Boulogne soils are poorly drained and in flatwoods. The very poorly drained Leon soils are in areas at the edges of tidal marshes. The poorly drained Leon soils are in flatwoods. Lynn Haven soils are very poorly drained and on flats.

The soils in this map unit mainly support natural vegetation. They are mainly used as spawning areas for many commercially important finfish and shellfish. The natural vegetation consists of needlegrass rush and sand cordgrass.

Broad Land Use Considerations

The soils in the survey area vary in their suitability for major land uses. About 53 percent of the acreage is used for the production of pine trees. Much of the acreage in general soil map units 5 and 6 is used as woodland. The high water table is the main limitation. Because of wetness, the equipment limitations are moderate or severe on the soils in these units. Limitations can be overcome by harvesting only during the drier periods or by using special equipment.

The soils in general soil map units 7, 8, and 9 are frequently flooded or ponded, or both, mainly in winter and summer. Flooding, ponding, and wetness are the major limitations affecting the use of these soils.

Only a small acreage in Duval County is used for pasture. The soils in general soil map units 4, 5, and 6 are best suited to the production of grasses. The soils in general soil map units 1, 2, and 3 are generally unsuited to the production of grasses because of droughtiness.

Much of the county is developed for urban uses. Generally, moderately well drained to excessively drained soils are well suited for building site development. Kershaw, Ortega, and Cornelia soils in general soil map units 2, 3, and 4 are examples. In most of the other map units, the high water table, ponding, and the slope are the main management concerns. Soils on flood plains and in depressions, such as those in general soil map units 7, 8, and 9, are generally unsuited for building site development because of flooding and ponding.

The urbanized parts of the survey area have public sewage disposal systems and some private sewage disposal systems. Cornelia, Kershaw, Kureb, and Penney soils are well suited to septic tank absorption fields. The high water table is a major limitation for soils in all of the general soil map units in the county except general soil map unit 3. Alternative waste disposal systems, such as mounded septic tank absorption fields, can be used.

Limitations affecting the suitability of soils for recreational uses vary depending on the intensity of the expected use. The soils in general soil map units 7, 8, and 9 are very poorly suited to many recreational uses because of flooding and ponding. All of the general soil map units have soils that are suitable for some recreational uses, such as paths and trails for hiking or horseback riding. Small areas that are suitable for intensive recreational uses generally occur

in general soil map units that otherwise have severe limitations.

The suitability of soils for wildlife habitat generally is good in areas throughout the county. All of the general soil map units have soils that are generally well suited to habitat for openland wildlife or woodland wildlife, or both. Areas in general soil map units 7, 8, and 9 and scattered areas in general soil map units 2, 3, 4, 5, and 6 are suited to habitat for wetland wildlife.

Detailed Soil Map Units

The map units delineated on the detailed maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit.

Soils that have profiles that are almost alike make up a *soil series.* Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, susceptibiliy to flooding or ponding, salinity, depth to high water table, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases.* Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Mascotte fine sand, 0 to 2 percent slopes, is a phase of the Mascotte series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Hurricane and Ridgewood soils, 0 to 5 percent slopes, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example.

Detailed map unit composition was determined by the subjective judgement method. *Subjective judgement* implies that 3 to 30 or more arbitrarily selected observations and less than 10 randomly selected observations are used to subjectively formulate map unit composition. The project staff relies mainly on impressions from field experience.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables (see "Contents") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

2—Albany fine sand, 0 to 5 percent slopes

Composition

Albany soil and similar components: 85 to 92 percent
Contrasting components: 8 to 15 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Convex
Size of areas: 3 to 50 acres

Minor Components

Contrasting:
• Blanton soils, which are moderately well drained and on landforms similar to those of the Albany soil
• Mascotte soils, which are poorly drained and in flatwoods
• Pelham soils, which are poorly drained and in flatwoods
• Sapelo soils, which are poorly drained and in flatwoods

Similar:
• Hurricane soils that are on landforms similar to those of the Albany soil
• Soils that have a loamy subsoil within a depth of 40 inches and are on landforms similar to those of the Albany soil

6—Aquic Quartzipsamments, 0 to 2 percent slopes

Composition

Aquic Quartzipsamments and similar components: 85 to 90 percent
Contrasting components: 10 to 15 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained or moderately well drained
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Soils that contain shell fragments or rocks and are on landforms similar to those of the major soils

Similar:
• Soils that are covered with less that 2 feet of fill and are on landforms similar to those of the major soils

7—Arents, nearly level

Composition

Arents and similar components: 90 to 95 percent
Contrasting components: 5 to 10 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Loamy and sandy marine sediments
Shape of areas: Linear
Size of areas: 20 to 120 acres

Minor Components

Contrasting:
• Soils that have shell fragments, rocks, or muck and are on landforms similar to those of the Arents

Similar:
• Arents that do not have refuse and are on similar landforms

9—Arents, sanitary landfill

Composition

Arents and similar components: 90 to 95 percent
Contrasting components: 5 to 10 percent

Setting

Landform: Flatwoods and flats
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained or moderately well drained
Parent material: Loamy and sandy marine sediments
Shape of areas: Concave
Size of areas: 20 to 120 acres

Minor Components

Contrasting:
• Soils that have shell fragments, rocks, or muck and are on landforms similar to those of the Arents

Similar:
• Arents that do not have refuse and are on similar landforms

10—Beaches, very frequently flooded

Composition

Beaches: 95 to 100
Contrasting components: 0 to 5 percent

Setting

Landform: Beaches
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained or very poorly drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 200 to 600 acres

Minor Components

Contrasting:
• Corolla soils, which are somewhat poorly drained or moderately well drained and are on low dunes

12—Blanton fine sand, 0 to 6 percent slopes

Composition

Blanton soil and similar components: 85 to 99 percent
Contrasting components: 1 to 15 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Moderately well drained to somewhat excessively drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Convex
Size of areas: 3 to 80 acres

Minor Components

Contrasting:
• Albany soils, which are somewhat poorly drained and are on rises and knolls
• Boulogne soils, which are poorly drained and in flatwoods
• Goldhead soils, which are poorly drained and in flatwoods
• Mascotte soils, which are poorly drained and in flatwoods
• Pelham soils, which are poorly drained and on flats
• Ortega soils, which are moderately well drained, do not have a loamy subsoil, and are on elevated rises and knolls
• Penney soils, which are excessively drained and on rises and knolls
• Sapelo soils, which are poorly drained and in flatwoods
• Surrency soils, which are very poorly drained and on flood plains

Similar:
• Soils that are similar to the Blanton soil and have a high water table at a depth of 30 to 42 inches

14—Boulogne fine sand, 0 to 2 percent slopes

Composition

Boulogne soil and similar components: 95 to 100 percent
Contrasting components: 0 to 5 percent

Setting

Landform: Flatwoods

Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 3 to 50 acres

Minor Components

Contrasting:
- Lynn Haven soils, which are very poorly drained and on flats
- Pottsburg, high, soils, which are somewhat poorly drained and on rises and knolls
- Wesconnett soils, which are very poorly drained and in depressional areas

Similar:
- Leon soils, which are poorly drained and on landforms similar to those of the Boulogne soil
- Pottsburg soils, which are poorly drained and on landforms similar to those of the Boulogne soil
- Soils that have a layer of loamy fine sand or fine sandy loam above the lower, organic stained subsoil and are on landforms similar to those of the Boulogne soil

18—Corolla fine sand, gently undulating to rolling, rarely flooded

Composition

Corolla soil and similar components: 85 to 100 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Dunes affected by salt spray near the Atlantic Ocean
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained or moderately well drained
Parent material: Sandy marine sediments
Shape of areas: Convex or concave
Size of areas: 3 to 500 acres

Minor Components

Contrasting:
- Beaches
- Newhan soils, which are excessively drained and are not vegetated with trees on the higher dunes
- Fripp soils, which are excessively drained and support trees on the higher dunes

Similar:
- Soils that have a high water table at a depth of 42 to 72 inches and are on landforms similar to those of the Corolla soil

19—Cornelia fine sand, 0 to 5 percent slopes

Composition

Cornelia soil and similar components: 85 to 91 percent
Contrasting components: 9 to 15 percent

Setting

Landform: Rises
Landscape: Lower Coastal Plain
Natural drainage: Excessively drained
Parent material: Marine sediments
Shape of areas: Convex
Size of areas: 3 to 50 acres

Minor Components

Contrasting:
- Leon soils, which are poorly drained in flatwoods and very poorly drained in tidal marshes
- Mandarin soils, which are somewhat poorly drained and in flatwoods
- Ortega soils, which are moderately well drained and on rises and knolls

Similar:
- Soils that have a dark organic stained subsoil at a depth of 30 to 50 inches and are on landforms similar to those of the Cornelia soil
- Soils that have a high water table at a depth of 42 to 72 inches and are on landforms similar to those of the Cornelia soil

22—Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes

Composition

Evergreen soil and similar components: 63 to 65 percent
Wesconnett soil and similar components: 33 to 35 percent
Contrasting components: 0 to 4 percent

Setting

Landform: Depressions (fig. 6)
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Decomposed organic materials underlain by thick sandy marine sediments
Shape of areas: Concave
Size of areas: 3 to 125 acres

Figure 6.—An area of Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes, in the foreground. An area of Leon fine sand, 0 to 2 percent slopes, is in the flatwoods in the background.

Minor Components

Contrasting:
- Lynn Haven soils on flats
- Leon soils, which are poorly drained and in flatwoods
- Pamlico soils, which are organic and in depressions
- Pottsburg soils, which are poorly drained and on flats

Similar:
- Leon soils that have muck 0 to 8 inches thick and are on landforms similar to those of the Evergreen and Wesconnett soils
- Lynn Haven soils that have muck 0 to 8 inches thick and are on landforms similar to those of the Evergreen and Wesconnett soils

23—Fripp-Corolla, rarely flooded, complex, gently undulating to hilly

Composition

Fripp soil and similar components: 73 to 75 percent
Corolla soil and similar components: 23 to 25 percent
Contrasting components: 0 to 4 percent

Setting

Landform: Dunes (fig. 7)
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained to excessively drained
Parent material: Sandy marine sediments
Shape of areas: Convex or concave
Size of areas: 5 to 300 acres

Figure 7.—A landscape of Beaches, an area of Fripp-Corolla, rarely flooded, complex, gently undulating to hilly, and Urban land.

Minor Components

Contrasting:
• Boulogne soils, which are poorly drained and in flatwoods
• Leon soils, which are poorly drained and in flatwoods
• Lynn Haven soils, which are very poorly drained and on flats
• Mandarin soils, which are somewhat poorly drained and in flatwoods
• Pottsburg soils, which are poorly drained and in flatwoods
• Ortega soils, which are moderately well drained and on landforms similar to those of the Fripp and Corolla soils

Similar:
• Pottsburg, high, soils, which are somewhat poorly drained and on landforms similar to those of the Fripp and Corolla soils
• Newhan soils, which do not support trees and are on landforms similar to those of the Fripp and Corolla soils

24—Hurricane and Ridgewood soils, 0 to 5 percent slopes

Composition

Hurricane soil and similar components: 53 to 60 percent
Ridgewood soil and similar components: 33 to 40 percent
Contrasting components: 0 to 14 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 3 to 150 acres

Minor Components

Contrasting:
• Boulogne soils, which are poorly drained and in flatwoods

• Leon soils, which are poorly drained and in flatwoods
• Lynn Haven soils, which are very poorly drained and on flats
• Mandarin soils, which are somewhat poorly drained and in flatwoods
• Pottsburg soils, which are poorly drained and in flatwoods
• Ortega soils, which are moderately well drained and on landforms similar to those of the Hurricane and Ridgewood soils

Similar:
• Pottsburg, high, soils, which are somewhat poorly drained and on landforms similar to those of the Hurricane and Ridgewood soils

25—Kershaw fine sand, 2 to 8 percent slopes

Composition

Kershaw soil and similar components: 92 to 100 percent
Contrasting components: 0 to 8 percent

Setting

Landform: Rises
Landscape: Lower Coastal Plain
Natural drainage: Excessively drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 3 to 50 acres

Minor Components

Contrasting:
• Blanton soils, which are moderately well drained and on rises and knolls
• Ortega soils, which are moderately well drained and on rises and knolls

Similar:
• Penney soils, which have lamellae and are on landforms similar to those of the Kershaw soil
• Kureb soils, which have an eluvial layer and are on landforms similar to those of the Kershaw soil

26—Kershaw fine sand, smoothed, 0 to 2 percent slopes

Composition

Kershaw soil and similar components: 92 to 100 percent
Contrasting components: 0 to 8 percent

Setting

Landform: Rises leveled by mining operations (fig. 8)
Landscape: Lower Coastal Plain
Natural drainage: Excessively drained
Parent material: Sandy marine sediments
Shape of areas: Convex or concave
Size of areas: 30 to 500 acres

Minor Components

Contrasting:
• Ortega soils, which are moderately well drained and on landforms similar to those of the Kershaw soil

Similar:
• Penney soils, which have lamellae and are on landforms similar to those of the Kershaw soil

29—Kureb fine sand, 2 to 8 percent slopes

Composition

Kureb soil and similar components: 85 to 100 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Rises and dunes
Landscape: Lower Coastal Plain
Natural drainage: Excessively drained
Parent material: Sandy marine sediments
Shape of areas: Convex or concave
Size of areas: 3 to 50 acres

Minor Components

Contrasting:
• Cornelia soils, which have a dark organic stained subsoil and are on landforms similar to those of the Kureb soil
• Mandarin soils, which are somewhat poorly drained and in the slightly elevated flatwoods
• Ortega soils, which are moderately well drained and on landforms similar to those of the Kureb soil

Similar:
• Kershaw soils, which are on landforms similar to those of the Kureb soil

31—Kureb fine sand, rolling, 8 to 20 percent slopes

Composition

Kureb soil and similar components: 85 to 91 percent
Contrasting components: 9 to 15 percent

Figure 8.—An area of Kershaw fine sand, smoothed, 0 to 2 percent slopes, that has been mined for minerals.

Setting

Landform: Side slopes
Landscape: Lower Coastal Plain
Natural drainage: Excessively drained
Parent material: Sandy marine sediments
Shape of areas: Concave or convex
Size of areas: 10 to 500 acres

Minor Components

Contrasting:
• Mandarin soils, which are somewhat poorly drained and on landforms similar to those of the Kureb soil
• Ortega soils, which are moderately well drained and on landforms similar to those of the Kureb soil
• Ridgewood soils, which are somewhat poorly drained and on landforms similar to those of the Kureb soil

Similar:
• Kershaw soils, which are on landforms similar to those of the Kureb soil
• Soils that are similar to the Kureb soil, are moderately well drained, and are on landforms similar to those of the Kureb soil

32—Leon fine sand, 0 to 2 percent slopes

Composition

Leon soil and similar components: 89 to 98 percent
Contrasting components: 2 to 11 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained (fig. 9)
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 3 to 75 acres

Minor Components

Contrasting:
• Evergreen soils, which are very poorly drained and in depressions

- Lynn Haven soils, which are very poorly drained and on flats
- Pottsburg, high, soils, which are somewhat poorly drained and on rises and knolls
- Sapelo soils, which have a loamy subsoil and are on landforms similar to those of the Leon soil
- Wesconnett soils, which are very poorly drained and in depressions

Similar:
- Boulogne soils, which are on landforms similar to those of the Leon soil
- Pottsburg soils, which are on landforms similar to those of the Leon soil
- Soils that are on landforms similar to those of the Leon soil and that have a black or very dark gray surface layer that is more than 8 inches thick and has resulted from bedding practices
- Soils that have thin layers of loamy fine sand or fine sandy loam above the lower subsoil and are on landforms similar to those of the Leon soil

33—Leon fine sand, 0 to 2 percent slopes, very frequently flooded

Composition

Leon soil: 88 to 100 percent
Contrasting components: 0 to 12 percent

Setting

Landform: Tidal marshes
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 3 to 50 acres

Figure 9.—A storm retention pond in an area of urban development on Leon fine sand, 0 to 2 percent slopes.

Minor Components

Contrasting:
• Arents, which are poorly drained and on flats
• Leon soils that are poorly drained and in flatwoods
• Tisonia soils, which are very poorly drained and in tidal marshes

35—Lynn Haven fine sand, 0 to 2 percent slopes

Composition

Lynn Haven soil and similar components: 85 to 100 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Flats
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy marine sediments
Shape of areas: Concave
Size of areas: 3 to 75 acres

Minor Components

Contrasting:
• Boulogne soils, which are poorly drained and in flatwoods
• Evergreen soils, which are in depressions
• Leon soils, which are poorly drained and in flatwoods
• Wesconnett soils, which are in depressions

Similar:
• Pottsburg soils, which are poorly drained and on landforms similar to those of the Lynn Haven soil
• Wesconnett soils, which are very poorly drained, have organic material less than 8 inches thick, and are in landscape positions similar to those of the Lynn Haven soil
• Soils that have organic material less than 8 inches thick, are similar to the Lynn Haven soil, and are on similar landforms
• Soils that are similar to the Lynn Haven soil, have a black and very dark gray surface layer that is less than 8 inches thick, and have a weakly developed, dark organic stained subsoil

36—Mandarin fine sand, 0 to 2 percent slopes

Composition

Mandarin soil: 85 to 93 percent
Contrasting components: 7 to 15 percent

Setting

Landform: Slightly elevated flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Cornelia soils, which are excessively drained and on rises and knolls
• Hurricane soils, which are on rises and knolls
• Leon soils, which are poorly drained and in flatwoods
• Ridgewood soils, which are on rises and knolls

38—Mascotte fine sand, 0 to 2 percent slopes

Composition

Mascotte soil and similar components: 86 to 96 percent
Contrasting components: 4 to 14 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Linear
Size of areas: 3 to 60 acres

Minor Components

Contrasting:
• Albany soils, which are somewhat poorly drained and on rises and knolls
• Pelham soils, which are on low flats
• Surrency soils, which are very poorly drained and in depressions and on flood plains
• Yonges soils, which are on flats

Similar:
• Sapelo soils, which are on landforms similar to those of the Mascotte soil
• Soils that are on landforms similar to those of the Mascotte soil and that have a black or very dark gray surface layer that is more than 8 inches thick and that has resulted from bedding practices
• Soils that have a dark subsoil underlying the surface layer and are on landforms similar to those of the Mascotte soil

40—Maurepas muck, 0 to 1 percent slopes, frequently flooded

Composition

Maurepas soil and similar components: 85 to 95 percent
Contrasting components: 5 to 15 percent

Setting

Landform: Flood plains influenced by tidal action
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Decomposed organic material
Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
- Lynn Haven soils, which are on landforms similar to those of the Maurepas soil
- Rutlege soils, which are on landforms similar to those of the Maurepas soil
- Tisonia soils, which are in tidal marshes

Similar:
- Pamlico soils, which are organic, are nonsaline, and are on landforms similar to those of the Maurepas soil
- Soils that have organic material less than 51 inches thick and are on landforms similar to those of the Maurepas soil

42—Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes

Composition

Newhan soil and similar components: 77 to 78 percent
Corolla soil and similar components: 21 to 22 percent
Contrasting components: 0 to 2 percent

Setting

Landform: Dunes
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained to excessively drained
Parent material: Sandy marine sediments
Shape of areas: Convex or concave
Size of areas: 5 to 300 acres

Minor Components

Contrasting:
- Beaches

Similar:
- Fripp soils, which are on landforms similar to those of the Newhan and Corolla soils

44—Mascotte-Pelham complex, 0 to 2 percent slopes

Composition

Mascotte soil and similar components: 62 to 68 percent
Pelham soil and similar components: 18 to 31 percent
Contrasting components: 1 to 10 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Linear
Size of areas: 3 to 60 acres

Minor Components

Contrasting:
- Surrency soils, which are very poorly drained and in depressions

Similar:
- Sapelo soils, which are on landforms similar to those of the Mascotte and Pelham soils
- Soils that have a weakly developed, organic stained subsoil directly underneath the surface layer and are on landforms similar to those of the Mascotte and Pelham soils
- Soils that have a loamy subsoil below a depth of 40 inches and are on landforms similar to those of the Mascotte and Pelham soils

46—Ortega fine sand, 0 to 5 percent slopes

Composition

Ortega soil and similar components: 88 to 98 percent
Contrasting components: 2 to 12 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Moderately well drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 3 to 85 acres

Minor Components

Contrasting:
• Albany soils, which are somewhat poorly drained and on landforms similar to those of the Ortega soil
• Hurricane soils, which are somewhat poorly drained and on landforms similar to those of the Ortega soil
• Kershaw soils, which are excessively drained and on landforms similar to those of the Ortega soil
• Ridgewood soils, which are somewhat poorly drained and on landforms similar to those of the Ortega soil

Similar:
• Soils that have a dark organic stained subsoil within a depth of 80 inches and are on landforms similar to those of the Ortega soil

49—Pamlico muck, depressional, 0 to 1 percent slopes

Composition

Pamlico soil and similar components: 85 to 97 percent
Contrasting components: 3 to 15 percent

Setting

Landform: Depressions
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Decomposed organic materials
Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Evergreen soils, which are on landforms similar to those of the Pamlico soil
• Lynn Haven soils, which are on flats
• Pelham soils, which are poorly drained and on flats
• Surrency soils, which are on landforms similar to those of the Pamlico soil

Similar:
• Dorovan soils, which are on landforms similar to those of the Pamlico soil

50—Pamlico muck, 0 to 2 percent slopes, frequently flooded

Composition

Pamlico soil and similar components: 85 to 97 percent
Contrasting components: 3 to 15 percent

Setting

Landform: Flood plains
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Decomposed organic materials
Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Evergreen soils, which are on landforms similar to those of the Pamlico soil
• Lynn Haven soils, which are on flats
• Pelham soils, which are poorly drained and on flats
• Surrency soils, which are on landforms similar to those of the Pamlico soil
• Maurepas soils, which are on flood plains influenced by tidal action

Similar:
• Dorovan soils, which are on landforms similar to those of the Pamlico soil

51—Pelham fine sand, 0 to 2 percent slopes

Composition

Pelham soil and similar components: 90 to 96 percent
Contrasting components: 4 to 10 percent

Setting

Landform: Flats
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Linear
Size of areas: 3 to 150 acres

Minor Components

Contrasting:
• Albany soils, which are somewhat poorly drained and on rises and knolls
• Lynchburg soils, which are somewhat poorly drained and on rises and knolls
• Mascotte soils, which are in flatwoods
• Sapelo soils, which are in flatwoods
• Surrency soils, which are very poorly drained and in depressions or on flood plains
• Yonges soils, which are on flats

Similar:
• Soils that have a loamy subsoil below a depth of 40 inches and are on landforms similar to those of the Pelham soil

• Soils that are on landforms similar to those of the Pelham soil and have a black and very dark gray surface layer that is more than 10 inches thick and that has resulted from bedding practices
• Soils that have a weakly developed, dark organic stained subsoil directly underneath the surface layer and that are on landforms similar to those of the Pelham soil

53—Penney fine sand, 0 to 5 percent slopes

Composition

Penney soil and similar components: 87 to 100 percent
Contrasting components: 0 to 13 percent

Setting

Landform: Rises
Landscape: Lower Coastal Plain
Natural drainage: Excessively drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 3 to 120 acres

Minor Components

Contrasting:
• Blanton soils, which are moderately well drained and on rises and knolls
• Hurricane soils, which are somewhat poorly drained and on rises and knolls
• Ortega soils, which are moderately well drained and on rises and knolls
• Ridgewood soils, which are somewhat poorly drained and on rises and knolls

Similar:
• Kershaw soils, which are on landforms similar to those of the Penney soil

55—Pits

Composition

Pits and similar components: 99 percent
Contrasting components: 1 percent

Setting

Landform: Borrow pits
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained or poorly drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Concave
Size of areas: 5 to 50 acres

Minor Components

Contrasting:
• Pits in depressions on similar landforms
• Areas of water

Similar:
• Pits on low flats on similar landforms

56—Pottsburg fine sand, 0 to 2 percent slopes

Composition

Pottsburg soil and similar components: 88 to 93 percent
Contrasting components: 7 to 12 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 3 to 15 acres

Minor Components

Contrasting:
• Evergreen soils, which are very poorly drained and in depressions
• Hurricane soils, which are somewhat poorly drained and on rises and knolls
• Lynn Haven soils, which are very poorly drained and on flats
• Mandarin soils, which are somewhat poorly drained and in flatwoods
• Pottsburg, high, soils, which are somewhat poorly drained and on rises and knolls
• Wesconnett soils, which are very poorly drained and in depressions

Similar:
• Boulogne soils, which are on landforms similar to those of the Pottsburg soil
• Leon soils, which are on landforms similar to those of the Pottsburg soil

58—Pottsburg fine sand, high, 0 to 3 percent slopes

Composition

Pottsburg soil: 88 to 93 percent
Contrasting components: 7 to 12 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained
Parent material: Sandy marine sediments
Shape of areas: Convex
Size of areas: 3 to 150 acres

Minor Components

Contrasting:
- Boulogne soils, which are poorly drained and in flatwoods
- Hurricane soils, which are on landforms similar to those of the Pottsburg, high, soil
- Leon soils, which are poorly drained and in flatwoods
- Pottsburg soils that are poorly drained and in flatwoods
- Ridgewood soils, which are on rises and knolls

62—Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded

Composition

Rutlege soil and similar components: 85 to 100 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Flood plains
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy marine sediments
Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
- Boulogne soils, which are poorly drained and in flatwoods
- Evergreen soils, which are poorly drained and in depressions
- Lynn Haven soils, which are on flats
- Surrency soils, which are on flood plains

Similar:
- Soils that are covered by less that 8 inches of organic material and are on landforms similar to those of the Rutlege soil
- Soils that have a dark surface layer less than 10 inches thick and are on landforms similar to those of the Rutlege soil

63—Sapelo fine sand, 0 to 2 percent slopes

Composition

Sapelo soil and similar components: 85 to 95 percent
Contrasting components: 5 to 15 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 3 to 80 acres

Minor Components

Contrasting:
- Albany soils, which are somewhat poorly drained and are on rises and knolls
- Pelham soils, which are on flats
- Surrency soils, which are very poorly drained and in depressions or on flood plains
- Yonges soils, which are on flats

Similar:
- Mascotte soils, which are on landforms similar to those of the Sapelo soil

66—Surrency loamy fine sand, depressional, 0 to 2 percent slopes

Composition

Surrency soil and similar components: 85 to 100 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Depressions
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Concave
Size of areas: 3 to 80 acres

Minor Components

Contrasting:
- Lynn Haven soils, which are on flats
- Pamlico soils, which are on landforms similar to those of the Surrency soil
- Pelham soils, which are poorly drained and on flats
- Stockade soils, which are on landforms similar to those of the Surrency soil
- Yonges soils, which are poorly drained and on flats

Similar:
• Pelham soils, which are poorly drained and in depressions
• Soils that have a loamy subsoil within a depth of 20 inches and are on landforms similar to those of the Surrency soil

67—Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded

Composition

Surrency soil and similar components: 86 to 97 percent
Contrasting components: 3 to 14 percent

Setting

Landform: Flood plains
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Lynn Haven soils, which are on flats
• Pamlico soils, which are organic and on landforms similar to those of the Surrency soil
• Pelham soils, which are poorly drained and on flats
• Yonges soils, which are poorly drained and on flats

Similar:
• Soils that have less that 8 inches of organic material on the surface and are on landforms similar to those of the Surrency soil
• Soils that have a loamy subsoil at a depth of more than 40 inches and are on landforms similar to those of the Surrency soil
• Soils that have a sandy substratum within a depth of 60 inches and are on landforms similar to those of the Surrency soil
• Soils that have a loamy subsoil that is 6 to 20 inches thick and are on landforms similar to those of the Surrency soil
• Soils that do not have a dark surface layer and are on landforms similar to those of the Surrency soil

68—Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded

Composition

Tisonia soil and similar components: 95 to 100 percent
Contrasting components: 0 to 5 percent

Setting

Landform: Tidal marshes (fig. 10)
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Partly decomposed organic materials
Shape of areas: Linear
Size of areas: 10 to 1,000 acres or more

Minor Components

Contrasting:
• Boulogne soils, which are poorly drained and in flatwoods
• Leon soils that are tidal and in tidal marshes
• Maurepas soils, which are on flood plains

Similar:
• Soils that are on landforms similar to those of the Tisonia soil and that have silty and clayey materials containing considerable amounts of very fine sand in some places

69—Urban land

Composition

Urban land and similar components: 90 to 100 percent
Contrasting components: 0 to 10 percent

Setting

Landform: Flats, flatwoods, rises, and knolls (fig. 11)
Landscape: Lower Coastal Plain
Natural drainage: Variable, depending on associated soils
Parent material: Sandy and loamy sediments
Shape of areas: Linear
Size of areas: 20 to 500 acres

Minor Components

Contrasting:
• Adjoining soils, which are mainly on contrasting landforms

Similar:
• Arents, which are nearly level and on similar landforms

71—Urban land-Leon-Boulogne complex, 0 to 2 percent slopes

Composition

Urban land and similar components: 35 to 40 percent
Leon soil and similar components: 30 to 35 percent

Figure 10.—A landscape of Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded. An area of Leon fine sand, 0 to 2 percent slopes, very frequently flooded, is in the background. Tidal flats at low tide are in the foreground.

Boulogne soil and similar components: 20 to 25 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy marine sediments
Shape of areas: Linear
Size of areas: 10 to 500 acres or more

Minor Components

Contrasting:
- Evergreen soils, which are very poorly drained and in depressions
- Lynn Haven soils, which are very poorly drained and on flats
- Pottsburg, high, soils, which are somewhat poorly drained and on rises and knolls
- Rutlege soils, which are very poorly drained and on flood plains
- Wesconnett soils, which are very poorly drained and in depressions

Similar:
- Arents, which are nearly level and on landforms similar to those of the major components
- Pottsburg soils, which are on landforms similar to those of the major components

72—Urban land-Ortega-Kershaw complex, 0 to 8 percent slopes

Composition

Urban land and similar components: 35 to 40 percent
Ortega soil and similar components: 30 to 35 percent
Kershaw soil and similar components: 20 to 25 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Elevated, narrow to broad rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Moderately well drained to excessively drained
Parent material: Sandy and loamy sediments
Shape of areas: Elongated or irregularly oval
Size of areas: 20 to 500 acres or more

Minor Components

Contrasting:
• Hurricane soils, which are somewhat poorly drained and on rises and knolls
• Ridgewood soils, which are somewhat poorly drained and on rises and knolls

Similar:
• Kureb soils, which are on landforms similar to those of the major components
• Penney soils, which are on landforms similar to those of the major components

73—Urban land-Mascotte-Sapelo complex, 0 to 2 percent slopes

Composition

Urban land and similar components: 35 to 40 percent
Mascotte soil and similar components: 30 to 35 percent
Sapelo soil and similar components: 20 to 25 percent
Contrasting components: 0 to 15 percent

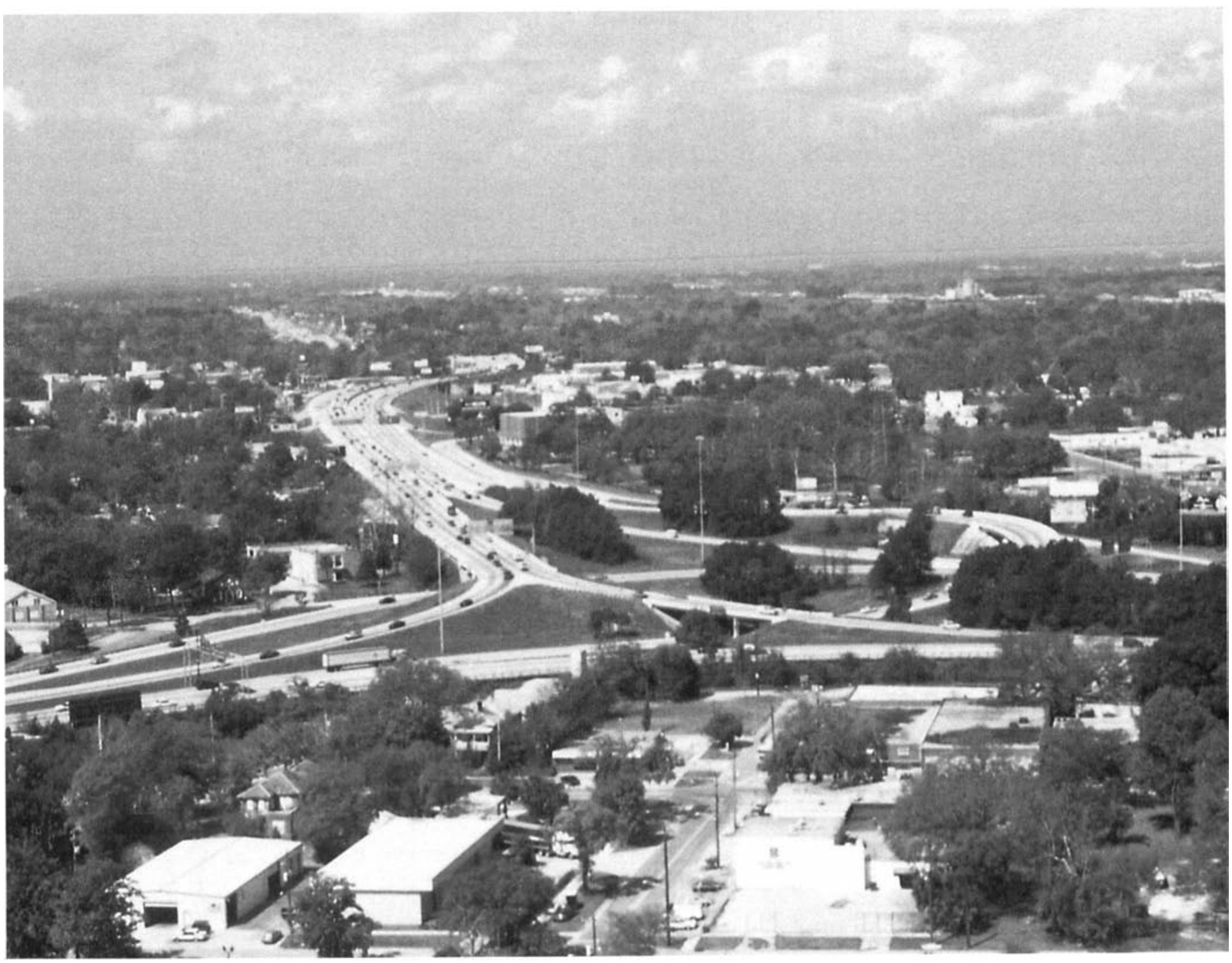


Figure 11.—The intersection of Interstate Highways 10 and 95 in an area of Urban land. The Pelham-Mascotte/Sapelo-Surrency general soil map unit is in the background.

Setting

Landform: Flatwoods
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Linear
Size of areas: 10 to 500 acres or more

Minor Components

Contrasting:
- Albany soils, which are somewhat poorly drained and on rises and knolls
- Pelham soils, which are on flats
- Surrency soils, which are very poorly drained and are in depressions and on flood plains

Similar:
- Arents, which are nearly level and on landforms similar to those of the major components

74—Pelham-Urban land complex, 0 to 2 percent slopes

Composition

Pelham soil and similar components: 50 to 60 percent
Urban land and similar components: 35 to 40 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Flats
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Linear
Size of areas: 10 to 500 acres or more

Minor Components

Contrasting:
- Albany soils, which are somewhat poorly drained and on rises and knolls
- Mascotte soils, which are in flatwoods
- Sapelo soils, which are in flatwoods
- Surrency soils, which are very poorly drained and in depressions and on flood plains

Similar:
- Soils that have a loamy subsoil below a depth of 40 inches and are on landforms similar to those of the major components
- Arents, which are nearly level and on landforms similar to those of the major components

75—Urban land-Hurricane-Albany complex, 0 to 5 percent slopes

Composition

Urban land and similar components: 35 to 40 percent
Hurricane soil and similar components: 30 to 35 percent
Albany soil and similar components: 20 to 25 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Linear
Size of areas: 10 to 200 acres or more

Minor Components

Contrasting:
- Blanton soils, which are moderately well drained and on landforms similar to those of the major components
- Leon soils, which are poorly drained and on flats
- Lynn Haven soils, which are poorly drained and in flatwoods
- Mascotte soils, which are poorly drained and in flatwoods
- Ortega soils, which are moderately well drained and on landforms similar to those of the major components
- Pottsburg soils, which are poorly drained and in flatwoods
- Soils that are similar to Pottsburg soils, do not have a deep, dark organic stained subsoil, and are on landforms similar to those of the major components
- Ridgewood soils that are on landforms similar to those of the major components
- Rutlege soils, which are very poorly drained and on flood plains
- Sapelo soils, which are poorly drained and in flatwoods

Similar:
- Pottsburg, high, soils, which are on landforms similar to those of the major components
- Arents, which are nearly level and on landforms similar to those of the major components

78—Yonges fine sandy loam, 0 to 2 percent slopes

Composition

Yonges soil and similar components: 85 to 89 percent
Contrasting components: 11 to 15 percent

Setting

Landform: Flats
Landscape: Lower Coastal Plain
Natural drainage: Poorly drained
Parent material: Loamy marine sediments
Shape of areas: Linear
Size of areas: 3 to 350 acres

Minor Components

Contrasting:
• Lynchburg soils, which are somewhat poorly drained and on rises and knolls
• Pelham soils, which are on landforms similar to those of the Yonges soil
• Yulee soils, which are very poorly drained and in depressions and on flood plains

Similar:
• Soils that are sandy clay in the upper part of the subsoil and are on landforms similar to those of the Yonges soil

79—Yulee clay, 0 to 2 percent slopes, frequently flooded

Composition

Yulee soil and similar components: 89 to 99 percent
Contrasting components: 1 to 11 percent

Setting

Landform: Flood plains
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Loamy and clayey sediments
Shape of areas: Concave
Size of areas: 50 to 500 acres

Minor Components

Contrasting:
• Surrency soils, which are on landforms similar to those of the Yulee soil
• Yonges soils, which are poorly drained and on flats

Similar:
• Soils that have less than 8 inches of organic material on the surface and are on landforms similar to those of the Yulee soil
• Soils that have a subsoil of sandy clay loam and are on landforms similar to those of the Yulee soil

80—Goldhead, wet, and Lynn Haven soils, 2 to 5 percent slopes

Composition

Goldhead soil and similar components: 50 to 55 percent
Lynn Haven soil and similar components: 35 to 45 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Seep areas on side slopes
Landscape: Lower Coastal Plain
Natural drainage: Goldhead—poorly drained; Lynn Haven—very poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Concave
Size of areas: 3 to 75 acres

Minor Components

Contrasting:
• Albany soils, which are somewhat poorly drained and on rises and knolls
• Boulogne soils, which are poorly drained and in flatwoods
• Mascotte soils, which are poorly drained and in flatwoods
• Sapelo soils, which are poorly drained and in flatwoods
• Surrency soils, which are very poorly drained and on flood plains

Similar:
• Soils that have a loamy subsoil below a depth of 40 inches and are on landforms similar to those of the Goldhead soil

81—Stockade fine sandy loam, depressional, 0 to 2 percent slopes

Composition

Stockade soil and similar components: 86 to 97 percent
Contrasting components: 3 to 14 percent

Setting

Landform: Depressions
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy and loamy sediments

Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Lynn Haven soils, which are on flats
• Pelham soils, which are poorly drained and on flats
• Yonges soils, which are poorly drained and on flats
• Yulee soils, which are on landforms similar to those of the Stockade soil

Similar:
• Soils that have less than 8 inches of organic material on the surface and are on landforms similar to those of the Stockade soil

82—Pelham fine sand, depressional, 0 to 2 percent slopes

Composition

Pelham soil and similar components: 90 to 96 percent
Contrasting components: 4 to 10 percent

Setting

Landform: Depressions
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Sandy and loamy sediments
Shape of areas: Concave
Size of areas: 3 to 150 acres

Minor Components

Contrasting:
• Pelham soils, which are poorly drained and on flats
• Yonges soils, which are poorly drained and on flats

Similar:
• Soils that have less than 8 inches of organic material on the surface and are on landforms similar to those of the Pelham soil
• Surrency soils, which are on landforms similar to those of the Pelham soil

86—Yulee clay, depressional, 0 to 2 percent slopes

Composition

Yulee soil and similar components: 85 to 100 percent
Contrasting components: 0 to 15 percent

Setting

Landform: Depressions
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Loamy and clayey sediments
Shape of areas: Concave
Size of areas: 3 to 25 acres

Minor Components

Contrasting:
• Pelham soils, which are poorly drained and on flats
• Stockade soils, which are on landforms similar to those of the Yulee soil
• Yonges soils, which are poorly drained and on flats

Similar:
• Soils that have a subsoil that extends to a depth of more than 60 inches and that are on landforms similar to those of the Yulee soil
• Soils that have organic material less than 8 inches thick and are on landforms similar to those of the Yulee soil

87—Dorovan muck, depressional, 0 to 2 percent slopes

Composition

Dorovan soil and similar components: 85 to 97 percent
Contrasting components: 3 to 15 percent

Setting

Landform: Depressions
Landscape: Lower Coastal Plain
Natural drainage: Very poorly drained
Parent material: Decomposed organic materials
Shape of areas: Concave
Size of areas: 3 to 100 acres

Minor Components

Contrasting:
• Evergreen soils, which are on landforms similar to those of the Dorovan soil
• Lynn Haven soils, which are on flats
• Surrency soils, which are on landforms similar to those of the Dorovan soil
• Wesconnett soils, which are on landforms similar to those of the Dorovan soil

Similar:
• Pamlico soils, which are on landforms similar to those of the Dorovan soil

88—Lynchburg fine sand, 0 to 2 percent slopes

Composition

Lynchburg soil: 85 to 97 percent
Contrasting components: 3 to 15 percent

Setting

Landform: Rises and knolls
Landscape: Lower Coastal Plain
Natural drainage: Somewhat poorly drained
Parent material: Sandy and loamy marine sediments
Shape of areas: Convex
Size of areas: 3 to 60 acres

Minor Components

Contrasting:
- Mascotte soils, which are poorly drained and in flatwoods
- Pelham soils, which are poorly drained and on flats
- Surrency soils, which are very poorly drained and in depressions and on flood plains
- Yonges soils, which are poorly drained and on flats

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Allen L. Moore, district conservationist, and E. Norman Porter, resource conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified, the system of land capability classification used by the Natural Resources Conservation Service is explained, the estimated yields of the main crops and hay and pasture plants are listed for each soil, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units" and in the tables. Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

More than 18,326 acres in Duval County is used for crops and pasture. About 5,270 acres is used for permanent pasture, and more than 13,056 acres is used for crops such as corn and grain sorghum. The acreage of crops and pasture has been gradually decreasing as more and more land is used for urban development.

Soil erosion is not a major problem on the cropland and pastureland in the county. Soil blowing can be a hazard on the better drained sandy soils and on the more poorly drained sandy soils that have been artificially drained. It can damage crops in a few hours if the wind is strong and the soil is dry and bare of vegetation or surface mulch. Soil blowing can be reduced by maintaining a vegetative cover or surface mulch; by planting windbreaks of adapted plant species, such as pine, red cedar, and myrtle; and by planting properly spaced, temporary strips of seasonal small grain at a right angle to the damaging wind.

Soil drainage is a major management concern on most of the acreage used for crops and pasture in the county. It is a problem on the poorly drained Boulogne, Leon, Pelham, Mascotte, Pottsburg, Sapelo, and Yonges soils. Albany, Blanton, Cornelia, Hurricane, Kershaw, Kureb, Mandarin, Ortega, and Ridgewood soils have good natural drainage and tend to dry out

quickly after rains. Irrigation is needed for crop production on these soils during periods of low rainfall.

Soil fertility is naturally low in most soils in the county. Most of the soils are naturally acid. The addition of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kind and amount of fertilizer and lime to apply.

Field crops grown in the county include corn and grain sorghum, which are used as feed for dairy cattle. The latest information about specialty crops can be obtained at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Most of the farm income in the county is derived from livestock enterprises, mainly dairy farms. On most dairies the forage produced is supplemented by corn or grain sorghum silage.

The main pasture plants in the county are improved bermudagrass and bahiagrass. Excess grass is harvested as hay and is either sold or is used as winter feed for livestock. Millet, sorghum, and sudangrass hybrids are grown during the summer for green chop or are used for grazing.

In areas of similar climate and topography, differences in the kind and amount of forage that the pasture can produce are closely related to the kind of soil. Pasture management is based on the relationship among soils, pasture plants, lime and fertilizer, and grazing systems. Yields can be increased by adding lime and fertilizer and by including grass-legume mixtures in the cropping system.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by the crop is an unnecessary expense and causes a hazard of water pollution. If corn or cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre. Because nitrogen can be readily leached from sandy soils, applications may be needed on these soils more than once during the growing season.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit *(44)*. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s*, or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the yields table.

Grazing Lands

Sid S. Brantly, range conservationist, National Resources Conservation Service, helped prepare this section.

Grazing lands of Duval County are comprised of tame pasture (which is primarily bahiagrass or bermudagrass) and grazeable woodland (which supports native grasses, forbs, and legumes that can be used for livestock or wildlife forage). An estimated 5,270 acres of tame pasture and 1,470 acres of grazeable woodland provide food and habitat for an estimated 15,000 head of cattle and countless numbers of wildlife. Many of the smaller private tracts are fenced and provide livestock grazing. Many of the larger wooded tracts that are owned by timber companies are not fenced, and the forage produced is not utilized.

The understory is an integral part of the woodland plant community. Some woodland, if well managed, can produce enough understory vegetation to support grazing by optimum numbers of livestock or wildlife, or both, without incurring damage to the trees. In areas of grazeable woodland, grazing is compatible with timber management if grazing is controlled or managed so that timber and forage resources are maintained or enhanced. Prescribed burning and commercial thinning are examples of management practices.

Forage production on grazeable woodland varies according to the kind of grazeable woodland, the amount of shade cast by the canopy, the accumulation of fallen needles, the influence of time and intensity of grazing on the grasses and forage, and the number, size, spacing, and method of site preparation for tree plantings. Because the production and availability of forage are directly related to tree canopy, the different age classes of trees cause a wide variation in forage production among individual tracts.

The pastureland in Duval County provides the components of habitat needed by several wildlife species. It also provides filtration and storage for some of the county's freshwater supplies. Bahiagrass and bermudagrass are managed on much of the pastureland in the county. Sound management plans for pastureland typically include maintaining proper stubble height, controlling weeds, fertilizing, applying lime, and developing a planned grazing system. The stubble height of bahiagrass is successfully managed at about 2 inches. Short grazing periods of this grass should by followed by 3- to 4-week rest periods. The stubble height of bermudagrass is best managed at about 4 inches. Grazing periods of this grass should be followed by 4- to 6-week rest periods.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is

limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. Generally, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable content of salt and sodium, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 284 acres in the survey area, or less than 0.1 percent of the total acreage, meets the soil requirements for prime farmland. Most areas of this land are in the northwestern part of the county, mainly in general soil map unit 6, which is described under the heading "General Soil Map Units." This prime farmland is used as woodland.

The map unit in the survey area that is considered prime farmland is Lynchburg fine sand, 0 to 2 percent slopes. This determination does not constitute a recommendation for a particular land use. Measures used to overcome a hazard or limitation, such as flooding, wetness, and droughtiness, may be needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of the map unit is shown in table 5. The location is shown on the detailed soil maps.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soil map units in the soil survey are indicated.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(11, 14, 41)*. Areas identified as wetlands must meet criteria for each of the characteristics. Undrained hydric soils that have natural vegetation support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses are capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the profile. These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. To determine whether a specific soil is a hydric or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Criteria which identify the estimated soil properties that are unique to hydric soils have been established *(42)*. These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria are selected estimated soil properties, which are are described in "Soil Taxonomy" *(45)*, the "National Soil Survey Handbook" *(40)*, and the "Soil Survey Manual" *(51)*.

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators that can be used to make onsite determinations of hydric soils in Duval County are specified in "Field Indicators of Hydric Soils in the United States" *(39)*.

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. The determination of an appropriate indicator may require a greater depth. Soil scientists excavate and describe the soils deep enough to understand the redoximorphic processes. After completing the soil description, soil scientists can compare the soil features required by each indicator and the conditions observed in the soil and determine which indicators occur. The soil can be identified as a hydric soil if one or more of the approved indicators occur.

This survey can be used to locate probable areas of hydric soils. Table 7 indicates which components and inclusions of the map units meet the definition of hydric soils and also have at least one of the hydric soil indicators. This list can help to plan land uses, but

onsite investigation is needed to determine the occurrence of hydric soils on a specific site.

Map units consisting of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units consisting of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

Relationships Between Soils and Native Vegetation

John F. Vance, Jr., biologist, Natural Resources Conservation Service, helped prepare this section

The concept of an ecological community is based on the awareness that a soil type commonly supports a specific vegetative community and that this community provides the habitat needed by specific wildlife species.

Vegetative communities form easily recognizable units on the landscape. Even with no botanical training, an observer can distinguish between pine flatwoods and pine-turkey oak sandhills; between hardwood hammocks and cypress swamps; and between mangrove swamps and salt marshes.

Some plants grow only under a very narrow range of conditions, but many plants can survive under a wide range of conditions. Individual plants that have high tolerance levels may grow in many different communities and on a variety of soil types. When describing ecological communities, plant scientists study the patterns of vegetative occurrence, including kinds of species, relative abundance, the stage of plant succession, dominant species, landscape position, and soil types where the pattern occurs. A recognizable pattern of vegetation is typically on a small group of soil types that have common characteristics. Through many years of field observation during soil surveys, the Natural Resources Conservation Service has determined which vegetative communities commonly occur on which soils throughout Florida. This information is summarized in a booklet called "26 Ecological Communities of Florida" *(48)*.

In this section, the vegetative communities occurring on individual map units during the climax state of plant succession are described. The plants named are those common under relatively natural conditions; however, human activities (such as management of pine plantations, agriculture, urbanization, and fire prevention) may have altered a community on a specific site and should be taken into consideration.

North Florida Coastal Strand

This community dominantly consists of sand live oak, live oak, and cabbage-palm. Common shrubs are marshelder, saw palmetto, Spanish bayonet, yaupon, and red bay. Common herbaceous plants and vines include blanketflower, fiddleleaf morning-glory, largeleaf pennywort, sea purslane, greenbriers, and wild grape. Common grasses and grasslike plants include bitter panicum, gulf bluestem, marshhay cordgrass, sandbur, seaoats, paspalum, seashore panicum, low panicum, and seashore saltgrass. The map units that support the North Florida Coastal Strand Ecological Community in Duval County are:

10 Beaches, very frequently flooded
18 Corolla fine sand, gently undulating to rolling, rarely flooded
23 Fripp-Corolla, rarely flooded, complex, gently undulating to hilly
42 Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes

Sand Pine Scrub

This community dominantly consists of bluejack oak, Chapman oak, myrtle oak, sand live oak, and sand pine. Common shrubs include dwarf huckleberry, gopher apple, pricklypear, and saw palmetto. Common herbaceous plants and vines are grassleaf goldenaster, deermoss, and greenbrier. Common grasses are yellow indiangrass and low panicum. The map units that support the Sand Pine Scrub Ecological Community in Duval County are:

29 Kureb fine sand, 2 to 8 percent slopes
31 Kureb fine sand, rolling, 8 to 20 percent slopes

Longleaf Pine-Turkey Oak Hill

This community dominantly consists of longleaf pine, turkey oak, bluejack oak, and post oak. Common shrubs include Adam's-needle, coontie, coralbean, shining sumac, and yaupon. Pricklypear, partridge pea, blazingstar, elephant's-foot, grassleaf goldaster, yellow indiangrass, and dropseed are common. The map units that support the Longleaf Pine-Turkey Oak Hill Ecological Community in Duval County are:

12 Blanton fine sand, 0 to 6 percent slopes
19 Cornelia fine sand, 0 to 5 percent slopes
24 Hurricane and Ridgewood soils, 0 to 5 percent slopes
25 Kershaw fine sand, 2 to 8 percent slopes
46 Ortega fine sand, 0 to 5 percent slopes
53 Penney fine sand, 0 to 5 percent slopes

North Florida Flatwoods

This community dominantly consists of slash pine, live oak, and sand live oak on the slightly higher ridges and has an understory of saw palmetto, gallberry, and grasses. Scattered water oak and laurel oak and several species of blueberry and waxmyrtle are also common. Chalky bluestem, broomsedge bluestem, lopsided indiangrass, low panicum, and wiregrass are the most common grasses. Other common plants include grassleaf goldaster, blackberry, brackenfern, deer tongue, gayfeather, milkworts, and a variety of seed-producing legumes. The map units that support the North Florida Flatwoods Ecological Community in Duval County are:

14 Boulogne fine sand, 0 to 2 percent slopes
32 Leon fine sand, 0 to 2 percent slopes
36 Mandarin fine sand, 0 to 2 percent slopes
38 Mascotte fine sand, 0 to 2 percent slopes
44 Mascotte-Pelham complex, 0 to 2 percent slopes
51 Pelham fine sand, 0 to 2 percent slopes
56 Pottsburg fine sand, 0 to 2 percent slopes
58 Pottsburg fine sand, high, 0 to 3 percent slopes
63 Sapelo fine sand, 0 to 2 percent slopes
88 Lynchburg fine sand, 0 to 2 percent slopes

Upland Hardwood Hammocks

This community dominantly consists of black cherry, eastern hophornbeam, flowering dogwood, hawthorns, laurel oak, laurelcherry, live oak, loblolly pine, longleaf pine, slash pine, pignut hickory, southern magnolia, sweetgum, and water oak and has an understory of American beautyberry, arrowwood, sparkleberry, and waxmyrtle. Low panicum and switchgrass are the common grasses. Other common plants are aster, cat greenbrier, common greenbrier, crossvine, partridge pea, poison ivy, ragweed, Spanish moss, Virginia creeper, wild grape, yellow jessamine, dotted horsemint, and blackberry. The map unit that supports the Upland Hardwood Hammocks Ecological Community in Duval County is:

2 Albany fine sand, 0 to 5 percent slopes

Wetland Hardwood Hammocks

This community dominantly consists of cabbage-palm, hawthorns, laurel oak, live oak, red bay, red maple, sweetbay, sweetgum, water oak, and magnolia. Common shrubs include waxmyrtle, witchhazel, and saw palmetto. Common herbaceous plants and vines include cinnamon fern, crossvine, royal fern, Spanish moss, Virginia creeper, wild grape, and yellow jessamine. Longleaf uniola and low panicum are the common grasses. The map unit that supports the Wetland Hardwood Hammocks Ecological Community in Duval County is:

78 Yonges fine sandy loam, 0 to 2 percent slopes

Cypress Swamp

This community dominantly consists of baldcypress, blackgum, Coastal Plain willow, pondcypress, and red maple. Common shrubs are common buttonbush and waxmyrtle. Common herbaceous plants and vines include cinnamon fern, fall-flowering ixia, laurel greenbrier, pickerelweed, royal fern, Spanish moss, and sphagnum moss. Maidencane and narrowleaf sawgrass are common grasses and grasslike plants. The map units that support the Cypress Swamp Ecological Community in Duval County are:

22 Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes
82 Pelham fine sand, depressional, 0 to 2 percent slopes

Salt Marshes

This community dominantly consists of grasses and grasslike plants, such as big cordgrass, black needlerush, gulf cordgrass, marshhay cordgrass, Olney bulrush, and seashore dropseed. Seablite and sea purslane are common herbaceous plants and vines. The map units that support the Salt Marshes Ecological Community in Duval County are:

33 Leon fine sand, tidal, 0 to 2 percent slopes, very frequently flooded
68 Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded

Swamp Hardwoods

This community dominantly consists of blackgum, red maple, Ogeechee lime, cypress, and bay trees. Common shrubs include fetterbush, Virginia willow, buttonbush, and waxmyrtle. Common herbaceous plants and vines include wild grape, greenbriers, and poison ivy. Maidencane, cinnamon fern, and sphagnum moss are also common. The map units that support the Swamp Hardwoods Ecological Community in Duval County are:

40 Maurepas muck, 0 to 1 percent slopes, frequently flooded
49 Pamlico muck, depressional, 0 to 1 percent slopes
50 Pamlico muck, 0 to 2 percent slopes, frequently flooded

62 Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded
66 Surrency loamy fine sand, depressional, 0 to 2 percent slopes
67 Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded
79 Yulee clay, 0 to 2 percent slopes, frequently flooded
81 Stockade fine sandy loam, depressional, 0 to 2 percent slopes
86 Yulee clay, depressional, 0 to 2 percent slopes
87 Dorovan muck, depressional, 0 to 2 percent slopes

Shrub Bogs-Bay Swamps

This community dominantly consists of a dense mass of evergreen shrubby vegetation. This vegetation is mainly large gallberry, fetterbush, myrtle-leaved holly, swamp cyrilla, greenbriers, sweet pepperbush, and sweetbay. Scattered slash pine or pond pine, or both, also occur. Cinnamon fern, maidencane, and sphagnum moss commonly grow in open areas. Shrub bogs dominantly consist of dense masses of evergreen shrubby vegetation that rarely is more than 25 feet in height. Bay swamps are forested wetlands that dominantly consist of one or two species of evergreen trees. A bay swamp is considered a climax community with mature trees, while a shrub bog is in the earlier stages of plant succession. Periodic fires help to keep some of the plants in the shrub bog or subclimax stage, especially swamp titi. The shrubs have many stems and thick foliage and commonly appear impenetrable. The map units that support the Shrub Bogs-Bay Swamps Ecological Community in Duval County are:

35 Lynn Haven fine sand, 0 to 2 percent slopes
80 Goldhead, wet, and Lynn Haven soils, 2 to 5 percent slopes

Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local office of the Natural Resources Conservation Service or the Cooperative Extension Service or from a commercial nursery.

Woodland Management and Productivity

Scott Crosby, county forester, Florida Division of Forestry, helped prepare this section.

About 262,713 acres, or nearly 48 percent of Duval County, is forest land *(34)*. Forestry has played an important economic role in the county's growth. In the early years of the settlement of Duval County, longleaf pine dominated the better drained areas and slash pine dominated the wet flatwoods. Longleaf pine was the only tree that could withstand the fires set by the settlers to clear woodland for grazing. Baldcypress, pondcypress, black tupelo, sweetgum, red maple, and various bays were the main trees on the river flood plains and in areas along ponds, drainageways, and swamps.

Harvesting timber, collecting pine gum resin, and cutting railroad crossties provided many jobs to county residents at one time. Past timber harvesting practices by private landowners and some current practices, however, have failed to allow the adequate regeneration of commercially important species. In addition, because burning methods are used less often, undesirable hardwoods now dominate the woods in some areas and hinder the establishment and growth of pine trees.

The soils and climate of Duval County are excellent for the management of southern pines (fig. 12). Slash pine is the major commercial tree and is planted throughout the county. Loblolly pine is planted to a great extent on Lynchburg, Pelham, and Yonges soils in the central part of the county. Natural stands of longleaf pine are scattered throughout the county in areas of Albany, Blanton, Hurricane, Kershaw, Ortega, Penney, and Ridgewood soils. Applying nitrogen, phosphorus, and potassium during planting operations encourages excellent growth response. Loblolly pine and slash pine grow best if adequate amounts of phosphorus are applied. Additional applications of fertilizer at midrotation should be based on a soil test or tissue analysis. Timber management consists mainly of clearcutting and intensive site preparation (fig. 13). The thinning of pine stands for the growth of residual saw timber and for salvage purposes is practiced on a small scale in the survey area. Prescribed burning is very important for removing slash during site preparation, for reducing the hazard of wildfires in established stands, and for promoting the growth of grasses and forbs that provide food or cover for cattle and a diversity of wildlife.

On the poorly drained soils in most of Duval County, management practices help to overcome seedling mortality, equipment limitations, and plant competition. The use of equipment is severely restricted during wet periods. Using tracks or flotation tires on planting and harvesting machinery and scheduling harvesting and planting operations during dry periods help to overcome equipment limitations, minimize soil compaction, and minimize root damage during thinning operations. Under proper management, trees can be harvested during the wetter periods. Plant competition from heavy brush and hardwood sprouting

Figure 12.—An area of Leon fine sand, 0 to 2 percent slopes, in the flatwoods. This soil is suited to the production of pine trees.

can severely affect seedling survival rates and growth. Site preparation, such as chopping and bedding or double-bedding, helps to establish seedlings, reduces seedling mortality, and increases early growth of the seedlings. Bedding should not block natural drainage.

Because of the hazard of erosion, construction of access roads, logging activities, and site preparation should be avoided in streambeds and adjacent areas. Cut tree limbs and tops should be kept clear of the stream channel because they can block streamflow. During harvesting operations, stream crossings should be avoided if possible. Culverts and bridges may be needed. The use of herbicides for chemical site preparation, either for natural or artificial regeneration, and for the control of woody competition in established pine stands is becoming more widespread in the survey area. The use of herbicides for site preparation offers several advantages over traditional mechanical methods, including increased control of competing vegetation at a lower cost, a reduction in soil erosion, and prevention of soil compaction. The proper use of forestry herbicides can reduce long-term costs for the landowner by controlling hardwood resprouting and thereby increasing site productivity.

The demand for timber is expected to continue to be high far into the next century. The timber market has helped many landowners to continue growing and managing their woodland for maximum production. To make the most of an investment in timber, decisions about which trees to plant should be based on evaluations of soil productivity and the quality of the final products. Physical soil characteristics indicate productivity. The most important characteristic that affects production capacity is the ability of the soil to provide adequate moisture. Other factors include the thickness of the surface layer and its content of organic matter, the natural supply of nutrients, texture and consistency of the soil material, aeration, internal drainage capability, and depth to the high water table. A well managed stand of trees helps to prevent soil deterioration and conserve soil and water. One important function of trees is to protect the soil. Erosion is not a major concern in most of Duval County, but tree cover also allows more moisture to

enter the soil by reducing the impact of rainfall on the soil and thus affects ground-water supplies.

There are plentiful markets for local wood producers. Six pulpmills are located within a 60-mile radius of Duval County. Chip-n-saw logs, poletimber, and veneer timber are aggressively marketed. There are several timber buyers and loggers, and more than 20 companies serve the survey area. The market for cypress saw timber is growing. Most cypress is sold locally for fencing and rough lumber, and the residual material is sold for mulch.

Managing habitat for woodland wildlife is an important recreational and economic concern in the survey area. Current forestry practices, such as clearcutting and burning, are beneficial in the production of wildlife food and cover. Deer, turkey, feral hogs, and quail are the main game species in the county.

Cary State Forest consists of 3,400 acres in the western part of the county along the Nassau-Duval County line. This area is managed under a multiple-use concept. Educational activities, timber production, recreation, and wildlife habitat are the main management considerations. The forest has an environmental education pavilion, a primitive campsite, a fire tower, and a ranger residence. Environmental education classes for students in Nassau and Duval Counties are conducted year-round. Timber management practices include thinning, prescribed burning, natural pine reproduction, and some tree planting. Diversity is a key element to management.

Soils vary in their ability to produce trees. Depth, fertility, texture, and the available water capacity influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. The available water capacity and depth of the root

Figure 13.—An area of Mascotte-Pelham complex, 0 to 2 percent slopes, that is bedded for pine trees.

zone are major influences on tree growth. This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to fertilization than others, and some are more susceptible to erosion after roads are built and timber is harvested. Some soils require special efforts for reforestation.

Individuals own thousands of acres of poorly stocked woodland throughout Duval County. Information about individual soils and site selection can help landowners make decisions that are necessary for increased productivity *(43)*. More detailed information on woodland management can be obtained at the local office of the Natural Resources Conservation Service, the Florida Division of Forestry, or the Cooperative Extension Service.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic feet per acre per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; *L*, low strength; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, L, and N.

In table 8, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site quality*, a *site index*, a *volume* number, and a *productivity* number *(5, 7, 25, 37, 49)*. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are

selected on the basis of growth rate, quality, value, and marketability.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year.

The *site quality* applies to fully stocked, even-aged, managed pine plantations. If a plantation is more than 10 years old, site quality curves for slash pine and loblolly pine can be used to estimate plantation site quality on a 25-year basis. Site index curves with a base age of 50 are available for sand pine and second-growth natural longleaf pine. Since longleaf pine is most commonly managed for sawtimber products, all values for longleaf pine are based on site index.

The *productivity* is the yield likely to be produced by the most important trees, expressed in cords per acre per year. Production figures are based on a stocking of 400 even-aged trees per acre and a 4-inch top outside bark measurement. If a plantation of longleaf pine at age 25 has a site quality of 70, the expected yield is 3,870 cubic feet per acre. If 1 rough cord is equal to about 92.5 cubic feet, then the expected yield is 42 cords per acre. If intensive forest management practices are applied, wood fiber production may be significantly greater than the production of natural stands.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common and most productive species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service or from a commercial nursery.

Recreation

Recreational development in Duval County is considerably important and has high potential. Recreational areas include beaches, National monuments, State and city parks, campgrounds, golf courses, swimming pools, tennis courts, riding stables, zoos, fishing areas, boating areas, football and baseball stadiums, theaters, museums, and suburban neighborhood playgrounds.

Recreational activities are typically located around the many miles of coastal beaches and the large expanses of inland waters, such as the Broward, Ceder, Nassau, Ortega, Trout, and St. Johns Rivers; Dunn, Julington, and Thomas Creeks; and the Intracoastal Waterway. The beaches attract many visitors, and surfing is popular. Boating, waterskiing, and fishing are popular on all of the inland rivers and creeks and on the Intracoastal Waterway. Deep sea fishing is popular. Large acreages of woodland are used by private hunting clubs.

The soils of the survey area are rated in table 9 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning,

design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the period of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

John F. Vance, Jr., biologist, Natural Resources Conservation Service, helped prepare this section.

Duval County is mainly rural and provides good habitat for wildlife. The main areas of wildlife habitat are the shore along the Atlantic Ocean, the large swamps along the St. Johns and Nassau Rivers and their larger tributaries, and the large tracts of pine flatwoods. Large forest industry tracts make up about 262,713 acres.

Game species in the survey area include white-tailed deer, squirrels, turkey, bobwhite quail, feral hogs, and waterfowl. Nongame species include raccoon, rabbit, armadillo, opossum, skunk, bobcat, gray fox, red fox, and otter. Other wildlife includes a variety of songbirds, wading birds, woodpeckers, predatory birds, reptiles, and amphibians.

The freshwater streams and the saltwater areas along the coast provide good opportunities for fishing. The main species inhabiting the freshwater streams include largemouth bass, channel catfish, bullhead catfish, bluegill, redear sunfish, spotted sunfish, warmouth, black crappie, chain pickerel, gar, bowfin, and sucker. A wide variety of species, including spotted sea trout, flounder, mullet, red drum, and blue crabs, inhabit the saltwater areas.

Duval County has several endangered and threatened species. These species include the red-cockaded woodpecker and the alligator. A detailed list of these species and information about their range and habitat needs are available at the local office of the Natural Resources Conservation Service.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The ratings in table 10 are intended to be used as a guide and are not site

specific. Onsite investigation is needed for individual management plans.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, and pokeberry.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, yellow-poplar, black cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants, or both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, white-tailed deer, and black bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, muskrat, mink, and beaver.

Coastal Dune Management

John D. Griffin, agronomist, Natural Resources Conservation Service, helped prepare this section.

The coastal dune is a very recent formation in geologic time. It is controlled by ocean waves and winds. In areas of coastal dunes, the soil moisture, soil

salinity, and salt spray create a harsh environment for most plants.

Dune stabilization depends on the anchoring of vegetation. If the use of shallow wells causes ground water to drop below a critical level, the stabilizing plants will die. The vegetation is very fragile and vulnerable to trampling. Small jetties extending from the shore help to control the littoral drift and prevent the sand from supplementing the dunes.

The beach can be used for swimming, picnicking, shell collecting, fishing, and sunbathing. The primary dune, however, should not be used because it cannot withstand heavy traffic. Bridges should be built across the primary dune. If bridges are used, the trough is less likely to be damaged by traffic and minor development can occur.

The inland dune is as vulnerable as the primary dune. It is not suitable for development. The back dune is the most suitable part of the coastal dune for public use and development.

The estuarine and bay shore environments are among the most productive aquatic areas in the world. Valuable shellfish and fingerlings of important fish species inhabit these areas.

Important plants on the coastal dune include seaoats, blanketflower, fiddleleaf morning-glory, largeleaf pennywort, sea purslane, greenbriers, wild grape, bitter panicum, gulf bluestem, marshhay cordgrass, sandbur, seaoats, seashore paspalum, seashore panicum, low panicum, and seashore saltgrass.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and

landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm, dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the high water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the Duval Soil and Water Conservation District or the local office of the Cooperative Extension Service.

Sanitary Facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe (fig. 14). Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of

Figure 14.—A mounded septic tank absorption field in an area of Boulogne fine sand, 0 to 2 percent slopes.

the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in the table and rely on anaerobic bacteria to decompose waste materials.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater

overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope or bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel, or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the high water table is more than 3 feet. Soils rated *fair* have more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the high water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a high water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific

purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale, siltstone, and weathered granite saprolite, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a high water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a high water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area. Ponds that are less than about 2 acres in size are not shown on the maps because of the scale of mapping.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, mica, or salts or sodium. Depth to a high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts

that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table and permeability of the aquifer. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Drainage may be a major management consideration in some areas. Management of drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to a high water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the availability of suitable irrigation water, the depth of the root zone, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of soil blowing, a low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 21.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested is given in table 21.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074

millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time. It is the difference between the amount of soil water at field moisture capacity and the amount at wilting point.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind

and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, more than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. The soils assigned to group 1 are the most susceptible to soil blowing, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep or very deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in table 17, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by

runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 17 are the depth to the high water table; the kind of water table—that is, *perched* or *apparent*; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the high water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

A *cemented pan* is a cemented or indurated subsurface layer within a depth of 5 feet. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. Table 17 shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors. Not shown in the table is subsidence caused by an imposed surface load or by the withdrawal of ground water throughout an extensive area as a result of lowering the water table.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Physical, Chemical, and Mineralogical Analyses of Selected Soils

M.A. Granger, visiting assistant professor, V.W. Carlisle and R.E. Caldwell, Professors of Soil Science, Soil Science Department (currently Soil and Water Science Department), and M.E. Collins, Professor of Environmental Pedology, Soil and Water Science Department, Agricultural Experiment Stations, University of Florida, prepared this section.

Parameters for physical, chemical, and mineral properties of representative pedons sampled in Duval and Nassau Counties are presented in tables 18, 19, and 20. The soils in Duval County were sampled during the period 1974 to 1976, and the soils in Nassau County were sampled in 1984 and 1985 *(47)*. The soils sampled in Nassau County represent soils mapped in Duval County. No additional soils were sampled during the fieldwork for this soil survey. Laboratory procedures stated generally are those used for the soil survey of City of Jacksonville, Duval County, Florida. In some cases, different procedures were used for the soil survey of Nassau County. The analyses were conducted and coordinated by the Soil Characterization Laboratory (currently the Environmental Pedology and Land Use Laboratory) at the University of Florida. Laboratory data and pedon information for additional soils in Duval County and for other Florida counties are part of a computerized soil information database at the Soil and Water Science Department, University of Florida. The data are for soils sampled at carefully selected sites. Some of the sites may no longer be accessible since the soils were sampled before much of the urbanization occurred. The pedons are typical of the series. They are described in the section "Soil Series and Their Morphology."

Samples were air dried, crushed, and sieved through a 2-millimeter screen. Particle-size distribution was determined by using a modification of the Bouyoucos hydrometer procedure with sodium hexametaphosphate as the dispersant *(6)*. Hydraulic conductivity, bulk density, and water content were determined using undisturbed core samples. Organic carbon was determined by a modification of the Walkley-Black wet combustion method. Extractable bases were obtained by leaching soils with ammonium acetate buffered at pH 7.0, sodium and potassium in the extract were determined by flame photometry, and calcium and magnesium were determined by atomic absorption spectroscopy. Extractable acidity was determined by the barium chloride-triethanolamine method at pH 8.2. Cation-exchange capacity was calculated by summation of extractable bases and extractable acidity. Base saturation is the ratio of extractable bases to cation-exchange capacity expressed as a percentage. The pH measurements were made by a glass electrode using a soil-water ratio of 1:1, a 0.01 molar calcium chloride solution in a 1:2 soil-solution ratio, and an N potassium chloride solution in a 1:1 soil-solution ratio.

Carbon, iron, and aluminum were extracted from suspected spodic horizons with 0.1 molar sodium pyrophosphate. Determination of iron and aluminum was by atomic absorption spectroscopy. Determination of extracted carbon was by the Walkley-Black wet combustion method. Mineralogy of the clay fraction was ascertained by x-ray diffraction. Peak heights were taken at 18-angstrom, 14-angstrom, 7.2-angstrom, 4.83-angstrom, and 4.31-angstrom positions. These positions represent montmorillonite, interstratified expandable vermiculite or 14-angstrom intergrades, kaolinite, gibbsite, and quartz, respectively. They were measured, summed, and normalized to determine percentage of soil minerals identified in the x-ray diffractograms. This percentage is not an absolute quantity but a relative distribution of clay minerals in the clay fraction. Determination of absolute percentage requires additional knowledge of particle size, crystallinity, and crystal lattice substitution.

Physical characteristics of important soils in Duval County are reported in table 18. Most of the soils are inherently sandy. Many pedons, including those of Boulogne, Fripp, Kershaw, Kureb, Leon, Mandarin, Penney, and Pottsburg soils, have sand texture and no more than about 6 to 7 percent clay texture to a depth of about 2 meters. Other pedons, such as those of Albany, Blanton, Mascotte, Pelham, and Sapelo soils, have textural increases of clay in the lower horizons. Yonges and Stockade soils have a surface layer in which the clay content is greater than 10 percent and a subsoil in which the clay content is as much as 32 percent. In every case the sand fraction of these soils is dominated by fine sand. Calculations of sand ratios arbitrarily using fine sand to very fine sand indicate some consistency relative to depth. A variation of this relationship between the sand ratio and depth in the subsoil of Fripp and Mascotte soils may imply that inconsistencies are due to lithology rather than pedogenesis.

The textural implication for sandy soils is droughtiness. Based on bulk densities and the moisture retained between $^1/_{10}$ or $^1/_3$ bar and 15 bars,

these soils may have as little as 2.0 centimeters of plant-available water to a depth of 50 centimeters and as much as 25 centimeters to a depth of 1 meter. Hydraulic conductivity is high in many of these soils, commonly exceeding 60 centimeters per hour.

Chemical properties are reported in table 19. Extractable bases, cation-exchange capacity (sum of cations), and base saturation are low. These conditions are indicative of low natural fertility. Calcium and magnesium are the dominant bases, and there are only traces of potassium. The low content of potassium is also indicated by the lack of appreciable quantities of weatherable minerals (not reported) in the sampled soils. The cation-exchange capacity is less than 10 millequivalents per 100 grams of soil in most pedons primarily because of their sandy nature and consequent small total surface area. Cation-exchange capacities of Bh horizons are relatively higher than those of other horizons because of the increased reactivity of the associated organic material. This phenomenon is exemplified by all surface horizons and by the Bh horizons of Boulogne, Cornelia, Leon, Mandarin, Mascotte, and Sapelo soils. The dominant cations are primarily acid forming, as implied by extractable acidity and the relatively low base saturation in all of the soils, except Yonges soils. Soils that have a low cation-exchange capacity require only small amounts of bases to significantly alter base status and soil reaction, at least in the upper horizons. Consequently, successful crop production requires small but frequent applications of fertilizer. Soils that have a high base status and a high cation-exchange capacity are more fertile.

Organic carbon in surface horizons ranges from more than 0.5 percent in Fripp soils to more than 6 percent in Mascotte soils. Most soils, however, have a content of organic carbon that is about 1 or 2 percent in the surface horizon. In all of the pedons, except for those that have a Bh horizon, the content of organic carbon decreases as depth increases. The content of organic carbon in the Bh horizon ranges from less than 0.5 percent in the weakly expressed subhorizons of Leon soils and in the lower sequum of Pottsburg soils to more than 3 percent in Mascotte soils. In its native form, organic carbon appears to be the primary source of cation-exchange capacity in the upper horizons of soils in Duval County. It is directly responsible for improving physical condition and nutrient and water-retention capacities, particularly in sandy soils. The lack of significant quantities of clay in the upper horizons indicates that the proper agronomic use of these soils should include programs that conserve and maintain the vital component.

Soil reaction in calcium chloride (not shown in table 19) is uniformly low. It has a narrow range among horizons of the same pedon, and reaction seldom differs by more that 1 pH unit throughout the depth of the pedon. Soil reaction of Yonges soils is the exception; it ranges from pH 6.8 in the surface layer to about pH 7.7 in the subsoil. Correlation between pH and base saturation is not always evident nor always positive, but the degree of positive correlation is to some extent influenced by the cation-exchange capacity. Generally, the higher the cation-exchange capacity the poorer the relationship because of the increased buffering associated with an increased cation-exchange capacity.

Mineralogy of the coarser fraction (more than 0.002 millimeter) is invariably siliceous, predominantly quartz in all pedons, and is not reported in the tables. Crystalline components of the clay (less than 0.002 millimeter) are reported in table 20 for selected horizons of each sampled pedon even though the total clay content (see table 18) in many of these soils is relatively low. Generally, the clay mineralogical suite consists of montmorillonite, a 14-angstrom intergrade mineral, kaolinite, and quartz. Detectable amounts of gibbsite were noted in the subsoil of Albany, Boulogne, and Kershaw soils, and detectable amounts of mica were noted in Albany, Blanton, Fripp, and Kershaw soils. Neither gibbsite nor mica is dominant in any pedon, although the subsoil of Boulogne soils has a gibbsite content as great as 39 percent. Significant quantities of montmorillonite occur throughout Yonges, Pelham, and Stockade soils; in the surface horizon of Fripp, Kershaw, Mandarin, Boulogne, and Sapelo soils; and in the Bh horizon of Leon and Cornelia soils. The occurrence of montmorillonite in the Bh horizon is probably just the result of temporary stabilization of a transient phase by a coating of or close association with the organic complex. Its dominance, however, in the argillic horizons of Mascotte, Yonges, Pelham, and Stockade soils is expected. Kaolinite and 14-angstrom integrate minerals occur in most of the soils. In some cases, as in Albany, Penney, and Boulogne soils, the content of the 14-angstrom integrate mineral decreases and that of kaolinite increases as depth increases. This trend is not universal; in Kershaw, Leon, Mascotte, and Sapelo soils, both kaolinite and 14-angstrom integrate minerals increase in content as depth increases. In many pedons the content of clay-sized quartz is relatively high but does not show a consistent increasing or decreasing trend associated with depth. Typically, the clay content is not high enough for the clay mineralogy to significantly influence the management and use of the sampled soils.

Engineering Index Test Data

Table 21 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the Soils Laboratory, Florida Department of Transportation, Bureau of Materials and Research.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); Moisture density—T 99 (AASHTO), D 698 (ASTM); Specific gravity—T 100 (AASHTO), D 854 (ASTM); California bearing ratio—T 193 (AASHTO), D 1883 (ASTM); and Shrinkage—T 92 (AASHTO), D 427 (ASTM).

The tests were used to help evaluate the soils for engineering purposes. The determinations are based on data obtained by mechanical analysis and by tests that determine liquid limits and plastic limits.

The mechanical analyses were made by combined sieve and hydrometer methods *(6)*. The various grain-sized fractions are calculated on the basis of all the material in the soil sample, including that coarser than 2 millimeters in diameter. The mechanical analyses used in these methods should not be used for naming textural classes of soils.

Data on compaction, or moisture density, are important in earthwork. If soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, density decreases as moisture content increases. The highest dry density obtained in the compactive test is termed the maximum dry density. As a rule, maximum strength earthwork is attained by compacting the soil to the maximum dry density.

Liquid limit and plasticity index indicate the effect of water on the strength and consistency of the soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic state, and the liquid limit is the moisture content at which the soil material changes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. The data on liquid limit and plasticity index in table 21 are based on laboratory tests of soil samples.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(45, 52)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 22 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Spodosol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquod (*Aqu*, meaning aquic, plus *od*, from Spodosol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Alaquods (*Al*, meaning low content of iron, plus *aquod*, the suborder of the Spodosols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Alaquods.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is sandy, siliceous, thermic Typic Alaquods.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The location of the typical pedon is described, and coordinates generally are identified by the State plane grid system. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(51)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(45)* and in "Keys to Soil Taxonomy" *(52)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Albany Series

The Albany series consists of nearly level and gently sloping, somewhat poorly drained, sandy soils. These soils formed in thick deposits of sandy and loamy marine sediments. They are on rises and knolls.

The soils are moderately permeable and moderately slowly permeable. Generally, the high water table is at a depth of 12 to 30 inches. Slopes are convex and range from 0 to 5 percent. The Albany soils are loamy, siliceous, thermic Grossarenic Paleudults.

The Albany soils are closely associated on the landscape with Blanton, Boulogne, Goldhead, Hurricane, Mascotte, Pelham, Sapelo, Surrency, and Tisonia soils. Blanton soils are moderately well drained to somewhat excessively drained and on rises and knolls. Boulogne, Goldhead, Mascotte, Pelham, and Sapelo soils are poorly drained. Boulogne, Mascotte, and Sapelo soils have spodic horizons and are in flatwoods. Goldhead soils are in seep areas on side slopes. Pelham soils are on flats. Hurricane soils have spodic horizons. Surrency soils are very poorly drained and on flood plains. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Albany fine sand, 0 to 5 percent slopes (fig. 15); in a wooded area, approximately 100 feet east of Biscayne Road, 1.75 miles north of Dunn Avenue, Land Grant 38, T. 1 N., R. 26 E.

A—0 to 3 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; strongly acid; clear wavy boundary.

E—3 to 29 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint yellow (10YR 7/6) iron masses; single grained; loose; slightly acid; gradual wavy boundary.

Eg—29 to 50 inches; light gray (10YR 7/1) fine sand; common medium faint yellow (2.5Y 7/6) and few distinct reddish yellow (7.5YR 6/8) iron masses; single grained; loose; slightly acid; gradual smooth boundary.

Bt—50 to 63 inches; strong brown (7.5YR 5/8) fine sandy loam; common coarse distinct light gray (10YR 7/1) iron depletions and red (2.5YR 4/8) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.

Btg—63 to 88 inches; light gray (2.5Y 7/2) sandy clay loam; few fine prominent red (10R 4/8) and common coarse prominent reddish yellow (7.5YR 6/8) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay skins on faces of peds; strongly acid.

The thickness of the solum ranges from 80 to 96 inches. Reaction ranges from extremely acid to slightly acid in the A horizon and from extremely acid to moderately acid in the E and Bt horizons. Depth to the argillic horizon ranges from 40 to less than 80 inches.

The A or Ap horizon has hue of 10YR, value of 2 to 6, and chroma of 1 or 2. It is 3 to 10 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. Common or many distinct or prominent redoximorphic features in shades of white, gray, yellow, olive, brown, or red occur below a depth of 18 inches. The thickness of the horizon ranges from 25 to 65 inches.

The Eg horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. Redoximorphic features are in shades of yellow, olive, brown, or red. The thickness of the Eg horizon ranges from 5 to 30 inches. The combined thickness of the E and Eg horizons ranges from 34 to 70 inches.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. Redoximorphic features are in shades of brown, yellow, gray, or red.

The Btg horizon extends to a depth of 80 inches or more. It is neutral in hue or has hue of 10YR or 2.5Y, has value of 5 to 7, and has chroma of 2 or less. In some pedons, this horizon does not have a matrix color and is a mixture of redoximorphic features in shades of red, yellow, brown, or gray. The content of plinthite in the Btg horizon is less than 5 percent. Texture is fine sandy loam or sandy clay loam.

Blanton Series

The Blanton series consists of nearly level and gently sloping, moderately well drained to somewhat excessively drained soils. These soils formed in thick sandy and loamy marine sediments. They are on rises and knolls. The soils are moderately slowly permeable and moderately permeable. Generally, the high water table is at a depth of 42 to 72 inches. Slopes are convex and range from 0 to 5 percent. The Blanton soils are loamy, siliceous, thermic Grossarenic Paleudults.

The Blanton soils are closely associated on the landscape with Albany, Goldhead, Mascotte, Pelham, Penney, Sapelo, and Surrency soils. Albany soils are somewhat poorly drained and on rises and knolls. Goldhead and Pelham soils are poorly drained. Goldhead soils are in seep areas on side slopes. Pelham soils are on flats. Mascotte and Sapelo soils are poorly drained, have spodic horizons, and are in flatwoods. Penney soils are excessively drained, have lamellae, and are on rises and knolls. Surrency soils are very poorly drained and are in depressions and on flood plains.

Typical pedon of Blanton fine sand, 0 to 6 percent slopes (fig. 16); in a wooded area, approximately 0.7 mile south of Interstate 295, about 0.3 mile east of Interstate 95, Land Grant 50, T. 1 S., R. 26 E.

A—0 to 3 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; loose; strongly acid; clear wavy boundary.

E1—3 to 9 inches; pale brown (10YR 6/3) fine sand; few fine distinct white (10YR 8/1) bodies of uncoated sand grains and yellow (10YR 7/6) iron masses; single grained; loose; strongly acid; gradual wavy boundary.

E2—9 to 21 inches; very pale brown (10YR 7/4) fine sand; few fine distinct white (10YR 8/1) uncoated sand grains and few fine prominent yellowish red (5YR 5/6) iron masses; single grained; loose; moderately acid; gradual smooth boundary.

E3—21 to 36 inches; very pale brown (10YR 7/3) fine sand; few fine faint white (10YR 8/1) bodies of uncoated sand grains and few fine faint very pale brown (10YR 8/2) bodies; few fine distinct strong brown (7.5YR 5/8) iron masses; single grained; loose; moderately acid; gradual smooth boundary.

E4—36 to 54 inches; very pale brown (10YR 8/2) fine sand; few fine and medium faint very pale brown (10YR 7/3) iron masses; single grained; loose; moderately acid; clear wavy boundary.

Bt1—54 to 65 inches; yellowish brown (10YR 5/8) fine sandy loam; few medium distinct very pale brown (10YR 7/3), few fine prominent yellowish red (5YR 5/8), and common coarse distinct strong brown (7.5YR 5/8) iron masses; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—65 to 80 inches; strong brown (7.5YR 5/8) fine sandy loam; many coarse prominent dark yellowish brown (10YR 4/4) iron masses, many coarse prominent light gray (10YR 7/1) iron depletions, and few fine distinct yellowish red (5YR 5/6) iron masses having large pockets of pale yellow (2.5YR 7/4) fine sand; weak coarse subangular blocky structure; firm; sand grains bridged and coated with clay; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum ranges from 60 to 80 inches or more. Reaction ranges from very strongly acid to moderately acid throughout the profile. Depth to the argillic horizon ranges from 40 to less than 80 inches.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 3 to 8 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 1 to 8. In many pedons there are few or common, fine to coarse bodies or pockets of white or light gray uncoated sand grains. The color of these bodies or pockets is that of the uncoated sand grains and is not indicative of wetness. Common or many distinct or prominent iron masses in shades of gray, yellow, brown, or red occur in the E horizon below a depth of 42 inches.

Some pedons have a BE horizon. This horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. Redoximorphic features are in shades of gray, yellow, brown, or red. Texture is loamy fine sand or fine sandy loam. The horizon is less than 12 inches thick.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8. Redoximorphic features are in shades of brown, yellow, gray, or red. In most pedons bodies with chroma of 2 or less are within the upper 10 inches of the Bt horizon. The horizon is fine sandy loam or sandy clay loam.

The Btg horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 or 2, or it dominantly has chroma of 2 or less and contains redoximorphic features in shades of brown, yellow, gray, or red. Texture generally is fine sandy loam or sandy clay loam. Below a depth of 60 inches, it ranges to sandy clay. The content of nodular and platy plinthite is less than 5 percent. This horizon extends to a depth of 80 inches or more.

Boulogne Series

The Boulogne series consists of nearly level, poorly drained, sandy soils. These soils formed in thick sandy marine sediments. They are in flatwoods. The soils are slowly permeable. Generally, the high water table is at a depth of 6 to 18 inches. Slopes are linear and range from 0 to 2 percent. The Boulogne soils are sandy, siliceous, thermic Typic Alaquods.

The Boulogne soils are closely associated on the landscape with Blanton, Evergreen, Goldhead, Hurricane, Leon, Lynn Haven, Mandarin, Pottsburg, Rutlege, Tisonia, and Wesconnett soils. Blanton soils are moderately well drained to somewhat excessively drained and on rises and knolls. Evergreen, Lynn Haven, Rutlege, Tisonia, and Wesconnett soils are very poorly drained. Evergreen and Wesconnett soils are in depressions, Lynn Haven soils are on flats and in seep areas on side slopes, Rutlege soils are on flood plains, and Tisonia soils are in tidal marshes. Hurricane and Mandarin soils are somewhat poorly drained. Hurricane soils have spodic horizons below a depth of 50 inches and are on rises and knolls. Mandarin soils are in the slightly elevated flatwoods. Leon soils have eluvial horizons and are in flatwoods. Pottsburg soils are poorly drained in flatwoods and somewhat poorly drained on rises and knolls. They have spodic horizons below a depth of 50 inches.

Typical pedon of Boulogne fine sand, 0 to 2 percent

slopes (fig. 17); in a wooded area, approximately 1,000 feet west of Boney Road, 2,200 feet north of Cedar Point Road, SW1/4SE1/4NE1/4, sec. 31, T. 1 N., R. 28 E.

A—0 to 6 inches: very dark gray (10YR 3/1)) fine sand; weak fine granular structure; friable; extremely acid; clear smooth boundary.

Bh—6 to 16 inches; dark brown (7.5YR 3/2) fine sand; massive; friable; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

E—16 to 31 inches; very pale brown (10YR 7/3) fine sand; few fine distinct brownish yellow iron masses; single grained; loose; strongly acid; gradual smooth boundary.

B´h1—31 to 39 inches; dark reddish brown (5YR 3/3) fine sand; massive; friable; sand grains well coated with organic matter; strongly acid; gradual smooth boundary.

B´h2—39 to 60 inches; black (5YR 2/1) fine sand; massive; friable; sand grains well coated with organic matter; strongly acid; gradual wavy boundary.

B´h3—60 to 80 inches; black (5YR 2/1) fine sand; massive; very firm; weakly cemented; sand grains well coated with organic matter; strongly acid.

The thickness of the solum is more than 80 inches. Reaction ranges from extremely acid to moderately acid throughout the profile. Texture is dominantly fine sand but includes loamy fine sand in the Bh horizon.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2.

Some pedons have an incipient E horizon between the A and Bh horizons. This horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is about 2 inches thick.

The Bh horizon has hue of 5YR, value of 2 or 3, and chroma of 1 to 3; has hue of 7.5YR, value of 3, and chroma of 2 or 3; or has hue of 10YR, value of 3, and chroma of 2.

Some pedons have an E/Bh horizon. This horizon has hue of 7.5YR, value of 4 or 5, and chroma of 2. It has few or common bodies of Bh material.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2.

Some pedons have a thin transitional layer of loamy fine sand between the E and B´h horizons. This layer has streaks of fine sandy loam. It is as much as 6 inches thick.

The B´h horizon has hue of 7.5YR, value of 3, and chroma of 2 or has hue of 5YR, value of 2 or 3, and chroma of 1 or 2. More than half of the horizon in each pedon is weakly cemented in the lower part. The horizon is very friable or friable in the upper part and firm or very firm in the lower part. Depth to the firm or very firm, weakly cemented B´h horizon is more than 50 inches.

Cornelia Series

The Cornelia series consists of nearly level and gently sloping, excessively drained, sandy soils. These soils formed in thick sandy marine sediments. They are on rises. The soils are rapidly permeable and very rapidly permeable. Generally, the high water table is below a depth of 72 inches. Slopes are convex and range from 0 to 5 percent. The Cornelia soils are sandy, siliceous, thermic Arenic Alorthods.

The Cornelia soils are closely associated on the landscape with Albany, Kureb, Leon, Lynn Haven, Mandarin, Pottsburg, and Tisonia soils. Albany soils are somewhat poorly drained, have argillic horizons, and are on rises and knolls. Kureb soils do not have spodic horizons and are on rises. Leon and Mandarin soils have spodic horizons within a depth of 30 inches. Leon soils are poorly drained and in flatwoods. Mandarin soils are somewhat poorly drained and in the slightly elevated flatwoods. Lynn Haven soils are very poorly drained, have spodic horizons within a depth of 30 inches, have umbric epipedons, and are on flats. Pottsburg soils have spodic horizons below a depth of 50 inches. They are poorly drained in flatwoods and somewhat poorly drained on rises and knolls. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Cornelia fine sand, 0 to 5 percent slopes; in a wooded area, approximately 2,700 feet north of Edgewood Drive and 3,000 feet east of Palmetto Avenue of Ft. George Island, Land Grant 37, T. 1 S., R. 29 E.

A—0 to 7 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; extremely acid; clear smooth boundary.

E1—7 to 13 inches; gray (10YR 5/1) fine sand; single grained; loose; extremely acid; gradual wavy boundary.

E2—13 to 39 inches; white (10YR 8/1) fine sand; single grained; loose; very strongly acid; abrupt irregular boundary.

Bh1—39 to 44 inches; dark reddish brown (5YR 2/2) loamy fine sand; massive; friable; noncemented; sand grains well coated with organic matter; extremely acid; gradual wavy boundary.

Bh2—44 to 53 inches; dark reddish brown (5YR 3/3) fine sand; massive; friable; noncemented; sand grains well coated with organic matter; very strongly acid; gradual wavy boundary.

Bh3—53 to 73 inches; dark yellowish brown (10YR

4/4) fine sand; massive; very friable; noncemented; sand grains coated with organic matter; very strongly acid; gradual smooth boundary.

Bh4—73 to 92 inches; dark brown (7.5YR 4/4) fine sand; massive; very friable; noncemented; sand grains well coated with organic matter; strongly acid; gradual smooth boundary.

Bh5—92 to 106 inches; reddish brown (5YR 4/4) fine sand; massive; very friable; noncemented; sand grains well coated with organic matter; strongly acid.

Reaction ranges from extremely acid to strongly acid throughout the profile. Texture is dominantly fine sand but includes loamy fine sand in the Bh horizon. Depth to the Bh horizon ranges from 30 to 50 inches.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. It is 2 to 7 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It is 29 to 48 inches thick. The combined thickness of the A and E horizons ranges from 30 to 50 inches.

The Bh horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 4. This horizon is noncemented and has sand grains that are well coated with organic matter. It is more than 30 inches thick.

Corolla Series

The Corolla series consists of gently undulating to rolling, somewhat poorly drained and moderately well drained, sandy soils. These soils formed in thick sandy marine sediments that were reworked by the action of wind and waves. They are on dunes and are affected by salt spray in areas near the Atlantic Ocean. The soils are very rapidly permeable. Generally, the high water table is at a depth of about 18 to 42 inches. Slopes are convex or concave and range from 2 to 12 percent. The Corolla soils are thermic, uncoated Aquic Quartzipsamments.

The Corolla soils are closely associated on the landscape with Beaches and with Fripp, Mandarin, Newhan, and Tisonia soils. Beaches are flooded daily by ocean tides. Fripp and Newhan soils are excessively drained and on dunes. Mandarin soils are somewhat poorly drained, have spodic horizons, and are in flatwoods. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Corolla fine sand, gently undulating to rolling, rarely flooded; in Fernandina Beach, Nassau County, on a dune, 100 yards north of the junction of Sixth Street and Mary Street, sec. 9, T. 3 N., R. 29 E.

A—0 to 6 inches; very pale brown (10YR 7/2) fine sand; single grained; loose; common fine and few medium roots; few very fine black (10YR 2/1) minerals; slightly acid; clear smooth boundary.

C1—6 to 12 inches; pale brown (10YR 6/3) fine sand; single grained; loose; common fine and few medium roots; few very fine black (10YR 2/1) minerals; few fine shell fragments that are 1 to 3 millimeters in size; neutral; clear smooth boundary.

C2—12 to 20 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few fine roots; few very fine black (10YR 2/1) minerals; few fine shell fragments that are 1 to 3 millimeters in size; neutral; clear smooth boundary.

C3—20 to 26 inches; pale brown (10YR 6/3) sand; single grained; loose; few fine roots; few very fine black (10YR 2/1) minerals; common fine shell fragments that are 1 to 5 millimeters in size; neutral; clear smooth boundary.

C4—26 to 41 inches; light gray (10YR 7/2) sand; single grained; loose; few fine roots; few very fine black (10YR 2/1) minerals; common fine shell fragments that are 1 to 3 millimeters in size in thin horizontal layers; neutral; abrupt smooth boundary.

C5—41 to 80 inches; light gray (10YR 7/2) sand; single grained; loose; few very fine black (10YR 2/1) minerals; many fine shell fragments that are 1 to 10 millimeters in size and few whole shells; mildly alkaline.

The combined thickness of the A and C horizons is more than 72 inches. Texture is fine sand to coarse sand. Reaction ranges from moderately acid to moderately alkaline. Small, calcareous shell fragments and few shells are in many pedons. Few to many grains of black, dark brown, and white minerals occur in some areas.

The A horizon is neutral in hue or has hue of 10YR or 2.5Y, has value of 3 to 7, and has chroma of 3 or less. It is 2 to 8 inches thick.

The upper part of the C horizon is neutral in hue or has hue of 10YR or 2.5Y, has value of 4 to 7, and has chroma of 4 or less. In most pedons it has few or common redoximorphic features. Uncoated sand grains with low chroma that are associated with wetness occur as a stripped matrix at depths between 15 and 40 inches.

The Ab horizon, if it occurs, is at depths of 24 to 72 inches and is similar in color to the A horizon. It contains few or common pieces of undecomposed plant materials.

The lower part of the C horizon is neutral in hue or has hue of 10YR to 5Y, has value of 4 to 7, and has chroma of 2 or less.

Dorovan Series

The Dorovan series consists of nearly level, very poorly drained, organic soils. These soils formed in decomposed organic materials. They are in depressions. The soils are moderately permeable. Generally, the high water table is at or above the surface for very long periods. Slopes are concave and range from 0 to 2 percent. The Dorovan soils are dysic, thermic Typic Medisaprists.

The Dorovan soils are closely associated on the landscape with Evergreen, Lynn Haven, and Pamlico soils. Evergreen and Lynn Haven soils are mineral. Evergreen soils have histic epipedons. Pamlico soils have organic materials that are 16 to less than 52 inches thick.

Typical pedon of Dorovan muck, depressional, 0 to 2 percent slopes; in a wooded area, approximately 1,400 feet south-southwest of the junction of McCormick and Monument Roads, 200 feet northwest of Monument Road, Land Grant 39, T. 2 S., R. 28 E.

Oa1—0 to 12 inches; black (10YR 2/1) muck; 45 percent fiber unrubbed, 15 percent fiber rubbed; massive; friable; many fine roots; extremely acid; gradual wavy boundary.

Oa2—12 to 30 inches; black (10YR 2/1) mucky peat; 25 percent fiber unrubbed, 10 percent fiber rubbed; massive; friable; common fine roots; very strongly acid; gradual wavy boundary.

Oa3—30 to 80 inches; black (10YR 2/1) mucky peat; 35 percent fiber unrubbed, 25 percent fiber rubbed; massive; very friable; about 5 to 10 percent mineral material; extremely acid.

The organic material ranges from 51 to more than 80 inches thick. The organic layers are extremely acid or very strongly acid. The C horizon, if it occurs, is strongly acid or very strongly acid.

The Oe horizon, if it occurs, is neutral in hue and has value of 2 or 3 or has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3. It contains 40 to 90 percent fiber before rubbing and 20 to 60 percent fiber after rubbing. The layer is 0 to 4 inches thick.

The Oa horizon has hue of 5YR to 2.5Y or is neutral in hue, has value of 2 or 3, and has chroma of 3 or less. It contains 10 to 40 percent fiber before rubbing and less than 16 percent fiber after rubbing. Fibers remaining after rubbing are dominantly woody. A few logs and large fragments of wood are typically in the lower part of the organic layers. The horizon is 16 to more than 51 inches thick.

The Cg horizon, if it occurs, is neutral in hue or has hue of 10YR to 5Y, has value of 2 to 5, and has chroma of 1 or 2. It is fine sand, loamy fine sand, fine sandy loam, or sandy clay loam.

Evergreen Series

The Evergreen series consists of nearly level, very poorly drained soils. These soils formed in decomposed organic materials underlain by thick sandy marine sediments. They are in depressions. The soils are moderately slowly permeable to rapidly permeable. Generally, the high water table is at or above the surface for very long periods. Slopes are concave and range from 0 to 2 percent. The Evergreen soils are sandy, siliceous, thermic Histic Alaquods.

The Evergreen soils are closely associated with Boulogne, Dorovan, Leon, Lynn Haven, Pamlico, Pottsburg, and Wesconnett soils. Boulogne and Leon soils are poorly drained and in flatwoods. Dorovan soils have an organic layer that is more than 51 inches thick. Lynn Haven soils are on flats. Pamlico soils have organic materials 16 to more than 40 inches thick. Pottsburg soils have spodic horizons below a depth of 50 inches. They are poorly drained in flatwoods and somewhat poorly drained on rises and knolls. Wesconnett soils do not have a histic epipedon.

Typical pedon of Evergreen muck in an area of Evergreen-Leon complex, depressional, 0 to 2 percent slopes; approximately 6 miles west of Fernandina Beach, Nassau County, Florida, in a wooded area, 200 yards east of Rayioner Road 34A, about 1.1 miles north of Florida State Highway 200A, 0.7 mile west of Old Chester Road, Land Grant 51, T. 3 N., R. 27 E.

Oa—0 to 11 inches; black (10YR 2/1) muck; 30 percent fiber unrubbed, 5 percent fiber rubbed; massive; very friable; common fine and medium and few coarse roots; extremely acid; gradual wavy boundary.

A1—11 to 14 inches; black (10YR 2/1) loamy fine sand; massive; very friable; common fine and medium and few coarse roots; extremely acid; clear wavy boundary.

A2—14 to 17 inches; very dark gray (10YR 3/1) fine sand; single grained; loose; common medium and few fine and coarse roots; extremely acid; gradual wavy boundary.

E—17 to 26 inches; light brownish gray (10YR 6/2) fine sand; common medium distinct dark gray (10YR 4/1) bodies; single grained; loose; few fine and medium roots; very strongly acid; clear wavy boundary.

Bh1—26 to 54 inches; dark reddish brown (5YR 2/2) loamy fine sand; many coarse faint dark reddish brown (5YR 3/2) bodies; massive; friable; few fine

roots; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

Bh2—54 to 80 inches; dark reddish brown (5YR 3/2) fine sand; massive; very friable; sand grains coated with organic matter; very strongly acid.

The thickness of the solum is more than 80 inches. Reaction ranges from extremely acid to strongly acid.

The Oa horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2 or is neutral in hue and has value of 2 or 3. It contains 10 to 33 percent fiber before rubbing and less than 10 percent fiber after rubbing. This horizon is coarse granular or massive. It is 8 to 16 inches thick.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2 or is neutral in hue and has value of 2 or 3. It is a mixture of uncoated sand grains and organic matter. The horizon is 2 to 8 inches thick.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is 2 to 20 inches thick.

The Bh horizon extends to a depth of 80 inches or more. It has hue of 10YR to 5YR, value of 2 or 4, and chroma of 1 to 3. Sand grains are coated with organic matter. The quantity of small black or dark reddish brown, weakly cemented bodies ranges from none to many. The horizon is fine sand or loamy fine sand.

Fripp Series

The Fripp series consists of gently undulating to hilly, excessively drained, sandy soils. These soils formed in thick sandy marine sediments that were reworked by the action of wind and waves. They are on dunes. The soils are rapidly permeable and very rapidly permeable. Generally, the high water table is at a depth of more than 72 inches. Slopes are concave or convex and range from 2 to 20 percent. The Fripp soils are thermic, uncoated Typic Quartzipsamments.

The Fripp soils are closely associated on the landscape with Corolla, Mandarin, Newhan, and Tisonia soils. Corolla soils are somewhat poorly drained and moderately well drained. Mandarin soils are somewhat poorly drained, have spodic horizons, and are in the slightly elevated flatwoods. Newhan soils are on dunes, are affected by salt spray, and are not vegetated with trees. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Fripp fine sand in an area of Fripp-Corolla, rarely flooded, complex, gently undulating to hilly; in a wooded area, approximately 8,500 feet north of the office of Little Talbot Island State Park, 7,700 feet east of Highway A1A, on the northern tip of Little Talbot Island State Park, Land Grant 37, T. 1 N., R. 29 E.

A—0 to 6 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; strongly acid; clear wavy boundary.

C1—6 to 30 inches; very pale brown (10YR 8/3) fine sand; single grained; loose; common horizontal bands of rutile and ilmenite; moderately acid; diffuse wavy boundary.

C2—30 to 54 inches; very pale brown (10YR 8/3) fine sand; single grained; loose; common horizontal bands of rutile and ilmenite; slightly acid; diffuse wavy boundary.

C3—54 to 90 inches; very pale brown (10YR 8/3) fine sand; single grained; loose; common horizontal bands of rutile and ilmenite; neutral.

The content of silt plus clay in the 10- to 40-inch control section is less than 5 percent. Reaction ranges from strongly acid to mildly alkaline throughout the profile. Few to many fine dark minerals and few shell fragments occur in some pedons.

The A horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is 1 to 8 inches thick.

The upper part of the C horizon dominantly has hue of 10YR, value of 7 or 8, and chroma of 1 to 6. Its color ranges from hue of 7.5YR to 2.5Y, value of 5 to 8, and chroma of 1 to 8. The lower part of the C horizon dominantly has hue of 10YR to 5Y or is neutral in hue, has value of 6 to 8, and has chroma of 3 or less. It has chroma ranging to 8. Colors with low chroma are due to the color of the sand grains and are not indicative of wetness.

Goldhead Series

The Goldhead series consists of gently sloping, very poorly drained soils. These soils formed in thick sandy and loamy marine sediments. They are in seep areas on side slopes. The soils are moderately permeable. Generally, the high water table is at or near the soil surface. Slopes are concave and range from 2 to 5 percent. The Goldhead soils are loamy, siliceous, thermic Arenic Endoaqualfs.

The Goldhead soils are closely associated on the landscape with Albany, Blanton, Boulogne, Lynn Haven, Mascotte, Pelham, Sapelo, and Surrency soils. Albany and Blanton soils have argillic horizons below a depth of 40 inches and are on rises and knolls. Albany soils are somewhat poorly drained, and Blanton soils are moderately well drained to somewhat excessively drained. Boulogne, Mascotte, and Sapelo soils have spodic horizons and are in flatwoods. Lynn Haven soils are very poorly drained, have spodic horizons, and are on flats. Pelham soils are poorly drained and

on flats. Surrency soils are very poorly drained and are in depressions and on flood plains.

Typical pedon of Goldhead fine sand in an area of Goldhead, wet, and Lynn Haven soils, 2 to 5 percent slopes; approximately 14,500 feet south of Florida Highway 228 (Normandy Boulevard), 3,200 feet east of a logging road and Yellow Water Creek, and 3,400 feet north of the Clay County line, SW¹/₄SE¹/₄NE¹/₄, sec. 33, T. 3 S., R. 24 E.

A—0 to 6 inches; black (10YR 2/1) fine sand; fine granular structure; very friable; very strongly acid; clear wavy boundary.

Eg—6 to 31 inches; grayish brown (10YR 5/2) fine sand; clear coarse distinct very dark gray (10YR 3/1) accumulations of organic matter; single grained; loose; very strongly acid; clear wavy boundary.

Btg—31 to 63 inches; light brownish gray (2.5Y 6/2) sandy clay loam; few fine faint light gray (10YR 7/1) iron depletions; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Cg—63 to 80 inches; light gray (2.5Y 6/1) loamy fine sand; weak fine granular structure; very friable; very strongly acid.

The thickness of the solum ranges from 35 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile except where lime has been added. The underlying argillic horizon is at a depth of 20 to 40 inches.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is 4 to 9 inches thick.

The Eg horizon has hue of 10YR or 2.5Y, value of 4 to 7 and chroma of 1 or 2. Few or common redoximorphic features in shades of yellow, brown, or red occur in some pedons. The horizon is 14 to 32 inches thick.

Some pedons have a very dark gray (10YR 3/1) or dark gray (10YR 4/1) transitional horizon between the E and Btg horizons. This horizon is 0.5 inch to 3.0 inches thick.

The Btg horizon has hue of 10YR, 2.5Y, 5Y, or 5GY or is neutral in hue. It has value of 4 to 7 and chroma of 1 or 2. Redoximorphic features in shades of gray, yellow, brown, or red range from none to many throughout the horizon. Texture is fine sandy loam or sandy clay loam.

The Cg horizon has hue of 10YR, 2.5Y, 5Y, or 5GY, value of 5 to 7, and chroma of 1. Some pedons have redoximorphic features in shades of gray, yellow, brown, or red. Texture is fine sand or loamy fine sand.

Hurricane Series

The Hurricane series consists of nearly level and gently sloping, somewhat poorly drained, sandy soils. These soils formed in thick deposits of marine sand. They are on rises and knolls. The soils are moderately rapidly permeable and rapidly permeable. Generally, the high water table is at a depth of 24 to 42 inches. Slopes are convex and range from 0 to 5 percent. The Hurricane soils are sandy, siliceous, thermic Oxyaquic Alorthods.

The Hurricane soils are closely associated on the landscape with Albany, Boulogne, Leon, Lynn Haven, Ortega, Pottsburg, and Ridgewood soils. Albany soils have argillic horizons. Boulogne and Leon soils are poorly drained and in flatwoods. Lynn Haven soils are very poorly drained and on flats. Ortega soils are moderately well drained, do not have spodic horizons, and are on rises. Pottsburg soils have a high water table at a depth of 6 to 24 inches. They are poorly drained in flatwoods and somewhat poorly drained on rises and knolls. Ridgewood soils are sandy throughout and do not have spodic horizons.

Typical pedon of Hurricane fine sand in an area of Hurricane-Pottsburg fine sands, 0 to 5 percent slopes; in Nassau County, Florida, in a wooded area, approximately 2 miles south of Yulee, 50 feet south of Radio Road, 0.55 mile east of U.S. Highway 17, Land Grant 42, T. 2 N., R. 27 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) fine sand; common medium distinct pale brown (10YR 6/3) bodies; weak fine granular structure; very friable; many fine and common medium roots; extremely acid; clear smooth boundary.

E1—5 to 10 inches; yellowish brown (10YR 5/4) fine sand; few fine faint yellowish brown (10YR 5/8) iron masses and common medium distinct brownish gray (10YR 6/2) uncoated sand grains; few fine black distinct (10YR 2/1) specks of organic matter; single grained; loose; many fine and common medium roots; very strongly acid; gradual wavy boundary.

E2—10 to 20 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint yellowish brown (10YR 5/6) iron masses; few fine district black (10YR 2/1) specks of organic matter; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

E3—20 to 39 inches; light gray (10YR 7/2) fine sand; common medium faint pale brown (10YR 6/3) iron masses and light brownish gray (10YR 6/2) bodies; single grained; loose; extremely acid; gradual wavy boundary.

E4—39 to 68 inches; light gray (10YR 7/1) fine sand; single grained; loose; very strongly acid; gradual wavy boundary.

Bh1—68 to 77 inches; dark brown (7.5YR 3/2) fine sand; single grained; loose; common uncoated sand grains; extremely acid; clear wavy boundary.

Bh2—77 to 80 inches; dark reddish brown (5YR 3/2) fine sand; massive; friable; sand grains well coated with organic matter; extremely acid.

The solum is 60 inches or more thick. Depth to the spodic horizon ranges from 51 to 79 inches. Reaction ranges from extremely acid to moderately acid.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3. It is 2 to 17 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 8. Chroma of 1 or 2 commonly occurs in the lower part of the horizon. In some pedons few or common, fine to coarse bodies or pockets of white or light gray uncoated sand grains are below a depth of 20 inches. The color of these bodies or pockets is due to the color of the uncoated sand grains and is not indicative of wetness. Common or many redoximorphic features occur at a depth of 24 to 42 inches. The horizon is 45 to 66 inches thick.

The Bh horizon has hue of 5YR to 10YR, value of 2 to 5, and chroma of 1 to 4. Texture is fine sand or loamy fine sand.

Kershaw Series

The Kershaw series consists of nearly level to sloping, excessively drained, sandy soils. These soils formed in thick deposits of marine sand. They are on rises. The soils are very rapidly permeable. Generally, the high water table is at a depth of more than 72 inches. Slopes are convex and range from 0 to 8 percent. The Kershaw soils are thermic, uncoated Typic Quartzipsamments.

The Kershaw soils are closely associated on the landscape with Kureb, Ortega, Penney, and Tisonia soils. Kureb soils have an E horizon. Ortega soils are moderately well drained and on rises and knolls. Penney soils have lamellae. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Kershaw fine sand, 2 to 8 percent slopes (fig. 18); in a wooded area, approximately 0.75 mile east of Monument Road, 1.25 miles south of Mt. Pleasant Road, NE1/4NE1/4SE1/4, sec. 4, T. 2 S., R. 28 E.

A—0 to 3 inches; very dark gray (10YR 3/1) fine sand; single grained; loose; few medium roots; strongly acid; clear smooth boundary.

C1—3 to 25 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few to many fine roots; strongly acid; diffuse wavy boundary.

C2—25 to 51 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; few to many fine roots; moderately acid; gradual smooth boundary.

C3—51 to 80 inches; brownish yellow (10YR 6/6) fine sand; single grained; loose; few fine roots; moderately acid.

Reaction ranges from very strongly acid to moderately acid. The 10- to 40-inch control section contains less than 5 percent silt plus clay.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. It is 2 to 7 inches thick.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 6 or has hue of 2.5Y, value of 5 to 8, and chroma of 4 or 6. Many pedons have few or common, fine to coarse bodies or pockets of white or light gray uncoated sand grains. The color of these bodies or pockets is due to the color of the uncoated sand grains and is not indicative of wetness. Common or many redoximorphic features occur below a depth of 72 inches. Black specks of charcoal occur in some pedons.

Kureb Series

The Kureb series consists of gently undulating to hilly, excessively drained soils. These soils formed in thick beds of marine, fluvial, or eolian sand. They are on rises, dunes, and side slopes. The soils are rapidly permeable. Generally, the high water table is at a depth of more than 72 inches. Slopes are convex and range from 0 to 20 percent. The Kureb soils are thermic, uncoated Spodic Quartzipsamments.

The Kureb soils are closely associated on the landscape with Cornelia, Kershaw, Mandarin, Ortega, Ridgewood, Tisonia, and Wesconnett soils. Cornelia, Mandarin, and Wesconnett soils have spodic horizons. Cornelia soils are excessively drained and on rises. Mandarin soils are somewhat poorly drained and in flatwoods. Wesconnett soils are very poorly drained and in depressions. Kershaw, Ortega, and Ridgewood soils do not have an E horizon. Kershaw soils are on landforms similar to those of the Kureb soils. Ortega soils are moderately well drained and on rises and knolls. Ridgewood soils are somewhat poorly drained and on rises and knolls. Tisonia soils are very poorly drained and organic and are in tidal marches.

Typical pedon of Kureb fine sand, 2 to 8 percent slopes; in a wooded area, approximately 4,500 feet east of Monument Road, 1,800 feet south of the east end of Ft. Caroline Road, Land Grant 45, T. 1 S., R. 28 E.

A—0 to 4 inches; dark gray (10YR 4/1) fine sand; single grained; loose; very strongly acid; clear smooth boundary.

E—4 to 16 inches; white (10YR 8/1) fine sand; single grained; loose; strongly acid; abrupt irregular boundary.

C/Bh—16 to 60 inches; yellow (10YR 7/6) fine sand; single grained; loose; common tongues of white (10YR 8/1) fine sand from the E horizon that are 2 to 6 inches in diameter and extend downward 12 to 44 inches; dark reddish brown (5YR 3/2) bands occurring intermittently at horizon contact along walls of tongues; very strongly acid in the upper 12 inches of horizon and strongly acid in the lower part; diffuse wavy boundary.

C—60 to 82 inches; very pale brown (10YR 8/4) fine sand; single grained; loose; few firm tongues of reddish brown (5YR 4/4) fine sand; strongly acid.

The sandy horizons are more than 80 inches thick. Reaction ranges from extremely acid to neutral throughout the profile. The content of silt plus clay in the 10- to 40-inch control section is less than 5 percent.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2. It is 2 to 5 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 3. It is 4 to 45 inches thick.

The C part of the C/Bh horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 8. The E part of this horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. The Bh part occurs at the contact of the C and E parts of the C/Bh horizon. It has hue of 5YR to 10YR, value of 2 to 6, and chroma of 2 to 4. The Bh part is 0.5 inch to 2.0 inches in thickness and is discontinuous in places.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 8. In many pedons it has few or common, fine to coarse bodies or pockets of white or light gray uncoated sand grains. The color of these bodies or pockets is due to the color of the uncoated sand grains and is not indicative of wetness. Common or many redoximorphic features are below a depth of 72 inches.

Leon Series

The Leon series consists of nearly level, poorly drained and very poorly drained, sandy soils. These soils formed in thick beds of marine sand. They are in flatwoods and tidal marshes. The soils are slowly permeable to moderately rapidly permeable. In areas in flatwoods, the high water table generally is at a depth of 6 to 18 inches. In tidal areas, the high water table generally is at or near the surface and the areas are flooded twice daily by fluctuating tides for very brief periods. Slopes are linear and range from 0 to 2 percent. The Leon soils are sandy, siliceous, thermic Aeric Alaquods.

The Leon soils are closely associated on the landscape with Boulogne, Cornelia, Dorovan, Evergreen, Hurricane, Lynn Haven, Mandarin, Pamlico, Pottsburg, Ridgewood, Rutlege, Tisonia, and Wesconnett soils. Boulogne soils do not have an E horizon and are in flatwoods. Cornelia soils are excessively drained and on rises. Dorovan, Pamlico, and Tisonia soils are very poorly drained and organic. Dorovan and Pamlico soils are in depressions, and Tisonia soils are in tidal marshes. Hurricane, Mandarin, and Ridgewood soils are somewhat poorly drained. Hurricane and Ridgewood soils are on rises and knolls, and Mandarin soils are in the slightly elevated flatwoods. Evergreen, Lynn Haven, Rutlege, and Wesconnett soils are very poorly drained. Evergreen and Wesconnett soils are in depressions, Lynn Haven soils are on flats, and Rutlege soils are on flood plains. Pottsburg soils have spodic horizons below a depth of 50 inches. They are poorly drained in flatwoods and somewhat poorly drained on rises and knolls.

Typical pedon of Leon fine sand, 0 to 2 percent slopes; in a wooded area, appropriately 800 feet west of U.S. Highway 17, about 1,600 feet north of Duval Road, NE¼NW¼NW¼, sec. 20, T. 1 N., R. 27 E.

A1—0 to 5 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; extremely acid; gradual smooth boundary.

A2—5 to 8 inches; dark gray (10YR 4/1) fine sand; single grained; loose; very strongly acid; gradual smooth boundary.

E—8 to 18 inches; gray (10YR 6/1) fine sand; single grained; loose; strongly acid; abrupt smooth boundary.

Bh1—18 to 26 inches; black (5YR 2/1) fine sand; massive; friable; noncemented; sand grains well coated with organic matter; strongly acid; gradual wavy boundary.

Bh2—26 to 37 inches; very dark gray (5YR 3/1) fine sand; common medium faint black (10YR 2/1) bodies; massive; friable; sand grains well coated with organic matter; very strongly acid; gradual wavy boundary.

E′—37 to 45 inches; dark brown (10YR 4/3) fine sand; common fine faint very dark grayish brown (10YR 5/2) bodies; weak fine subangular blocky structure; very friable; very strongly acid; gradual wavy boundary.

B′h1—45 to 66 inches; dark reddish brown (5YR 2/2) fine sand; massive; friable; sand grains well coated

with organic matter; very strongly acid; gradual irregular boundary.

B′h2—66 to 80 inches; dark reddish brown (5YR 2/2) fine sand; massive; firm; weakly cemented; sand grains well coated with organic matter; very strongly acid.

Texture is fine sand, muck, or mucky fine sand in the A or Oa horizon. It is dominantly fine sand in the other layers but includes loamy fine sand in the Bh horizon. Reaction typically ranges from extremely acid to slightly acid throughout the profile except where the surface layer has been limed. In tidal areas reaction ranges from very strongly acid to moderately alkaline. Depth to the Bh horizon is less than 30 inches.

The A horizon is neutral in hue and has value of 2 to 4 or has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. This horizon typically is 2 to 9 inches thick. Where the horizon has value of 3.5 or less, thickness of the horizon typically is less than 8 inches but is as much as 30 inches in tidal areas.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. It is 4 to 25 inches thick.

In some pedons a black (10YR 2/1) to dark gray (10YR 4/1) transitional horizon is between the E and Bh horizons. This horizon is 0.5 inch to 2.0 inches thick.

The Bh horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3. Sand grains are well coated with organic material. Vertical or horizontal, gray or light gray streaks or pockets occur in some pedons. The horizon is 6 to 35 inches thick.

The BE horizon, if it occurs, has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 to 4. It is as much as 36 inches thick.

The E′ horizon has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 3. This horizon may have brown or yellow gray iron masses. It is as much as 5 inches thick.

The B′h horizon extends to a depth of more than 80 inches. It is similar to the Bh horizon and occurs below the BE or E′ horizon.

Some pedons do not have a bisequum consisting of the E′ and B′h horizons but have a C horizon that has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 6. In tidal areas the C horizon contains shell fragments.

Lynchburg Series

The Lynchburg series consists of nearly level, somewhat poorly drained soils. These soils formed in sandy and loamy marine sediments. They are on rises and knolls. The soils are moderately permeable. Generally, the high water table is at a depth of 6 to 18 inches. Slopes are convex and range from 0 to 2 percent. The Lynchburg soils are fine-loamy, siliceous, thermic Aeric Paleaquults.

The Lynchburg soils are closely associated on the landscape with Mascotte, Pelham, Yonges, and Yulee soils. Mascotte soils are poorly drained, have spodic horizons, and are in flatwoods. Pelham and Yonges soils are poorly drained and on flats. Pelham soils have argillic horizons at a depth of 20 to 40 inches. Yulee soils are very poorly drained, have mollic epipedons, and are on flood plains and in depressions.

Typical pedon of Lynchburg fine sand, 0 to 2 percent slopes; in a pasture, approximately 1,600 feet north of Acree Road and 1,700 feet west of Old Kings Road, SW1/4NW1/4SE1/4, sec. 28, T. 1 S., R. 25 E.

Ap—0 to 4 inches; dark gray (10YR 4/1) fine sand; moderate fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.

Eg1—4 to 8 inches; gray (10YR 5/1) fine sand; common medium distinct light brownish gray (10YR 6/2) bodies and very dark gray (10YR 3/1) accumulations of organic matter; weak fine granular structure; very friable; common fine roots; mildly alkaline; clear smooth boundary.

Eg2—8 to 14 inches; light brownish gray (10YR 6/2) loamy fine sand; common medium distinct yellowish brown (10YR 5/4) and few prominent strong brown (7.5YR 5/6) iron masses; few faint grayish brown (10YR 5/2) bodies; weak fine granular structure; very friable; common fine roots; mildly alkaline; clear wavy boundary.

Btg1—14 to 38 inches; dark grayish brown (10YR 4/2) sandy clay loam; common fine distinct yellowish brown (10YR 5/6) and few fine faint yellowish brown (10YR 5/8) iron masses; weak coarse subangular blocky structure; very sticky; sand grains bridged and coated with clay; many clay skins on faces of peds; few fine roots; moderately alkaline; gradual wavy boundary.

Btg2—38 to 80 inches; light olive gray (5Y 6/2) sandy clay loam; few medium faint gray (10YR 5/1) iron depletions and common medium distinct yellowish brown (10YR 5/6) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; many clay films on faces of peds; few fine roots; moderately alkaline.

The thickness of the solum is more than 60 inches. Reaction ranges from extremely acid to moderately acid throughout the profile unless the surface layer has been limed.

The A or Ap horizon is neutral in hue or has hue of 10YR or 2.5Y, has value of 2 to 4, and has chroma of 2 or less. The horizon is 3 to 9 inches thick.

The Eg horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It has few or common redoximorphic features. The horizon is less than 10 inches thick.

The Btg horizon is neutral in hue or has hue of 10YR or 5Y, has value of 4 to 7, and has chroma of 2 or less. In most pedons it has few to many redoximorphic features in shades of gray, yellow, brown, or red. Texture is dominantly sandy clay loam but includes fine sandy loam. In some pedons the horizon is sandy clay or clay below a depth of 40 inches.

The BCg horizon, if it occurs, has colors similar to those of the B horizon. Texture is fine sandy loam.

Lynn Haven Series

The Lynn Haven series consists of nearly level and gently sloping, very poorly drained, sandy soils. These soils formed in thick beds of sandy marine sediments. They are on flats and in seep areas on side slopes. The soils are moderately permeable and moderately rapidly permeable. Generally, the high water table is at or near the surface. Slopes are concave and range from 0 to 5 percent. The Lynn Haven soils are sandy, siliceous, thermic Typic Alaquods.

The Lynn Haven soils are associated on the landscape with Boulogne, Cornelia, Dorovan, Evergreen, Goldhead, Hurricane, Leon, Mandarin, Maurepas, Pamlico, Pottsburg, Tisonia, and Wesconnett soils. Boulogne and Leon soils are poorly drained and do not have umbric epipedons. Cornelia soils are excessively drained, have spodic horizons below a depth of 50 inches, and are on rises. Dorovan, Maurepas, Pamlico, and Tisonia soils are organic. Dorovan and Pamlico soils are in depressions, Maurepas soils are on flood plains influenced by tides, and Tisonia soils are in tidal marshes. Evergreen soils have histic epipedons and are in depressions. Goldhead soils are poorly drained, do not have spodic horizons, and are in seep areas on side slopes. Hurricane soils are somewhat poorly drained and on rises and knolls. Mandarin soils are somewhat poorly drained and in the slightly elevated flatwoods. Pottsburg soils have spodic horizons below a depth of 50 inches. They are poorly drained in flatwoods and somewhat poorly drained on rises and knolls. Wesconnett soils do not have eluvial horizons and are in depressions.

Typical pedon of Lynn Haven fine sand, 0 to 2 percent slopes; in a wooded area, approximately 100 feet north of Yellow Bluff Road, 1.44 miles east of U.S. Highway 17, SE1/4NE1/4SW1/4, sec. 3, T. 1 N., R. 27 E.

A1—0 to 7 inches; black (10YR 2/1) fine sand; weak fine granular structure; very friable; extremely acid; gradual wavy boundary.

A2—7 to 13 inches; very dark gray (10YR 3/1) fine sand; weak fine granular structure; very friable; very strongly acid; gradual wavy boundary.

E—13 to 21 inches; mixed light gray (10YR 7/1) and gray (10YR 6/1) fine sand; single grained; loose; many root channels filled with black (10YR 2/1) and very dark gray (10YR 3/1) accumulations of organic matter; very strongly acid; clear wavy boundary.

Bh1—21 to 35 inches; black (5YR 2/1) fine sand; massive; friable; noncemented; sand grains coated with organic matter; extremely acid; gradual wavy boundary.

Bh2—35 to 48 inches; dark reddish brown (5YR 3/2) fine sand; massive; friable; few tongues of black (5YR 2/1) fine sand from horizon above; noncemented; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

Bh3—48 to 62 inches; dark reddish brown (5YR 2/2) fine sand; few fine faint dark brown (10YR 3/3) bodies; massive; friable; sand grains well coated with organic matter; strongly acid; gradual wavy boundary.

B/C—62 to 80 inches; dark brown (7.5YR 4/3) fine sand; moderate medium subangular blocky structure; friable; very strongly acid.

Texture is dominantly fine sand but includes loamy fine sand in the Bh horizon. Reaction ranges from extremely acid to strongly acid.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. It is 8 to 20 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It is 2 to 18 inches thick.

A transitional layer occurs between the E and Bh horizons. It is about 1 inch thick. Colors are dark gray to black. The layer has many uncoated sand grains. Vertical or horizontal tongues or pockets of grayish sand occur in the Bh horizon in some pedons.

The Bh horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 4. It is 6 to more than 50 inches thick.

The B/C horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. It has gray, brown, yellow, or red bodies. The horizon is as much as 10 inches thick.

Some pedons have a bisequum consisting of the E′ and B′h horizons.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 to 3 or has hue of 7.5YR, value of 7, and chroma of 2. It has iron masses in shades of brown, yellow, or red.

Figure 15.—Typical profile of Albany fine sand, 0 to 5 percent slopes. Depth is marked in meters and feet.

Figure 16.—Typical profile of Blanton fine sand, 0 to 6 percent slopes. Depth is marked in meters and feet.

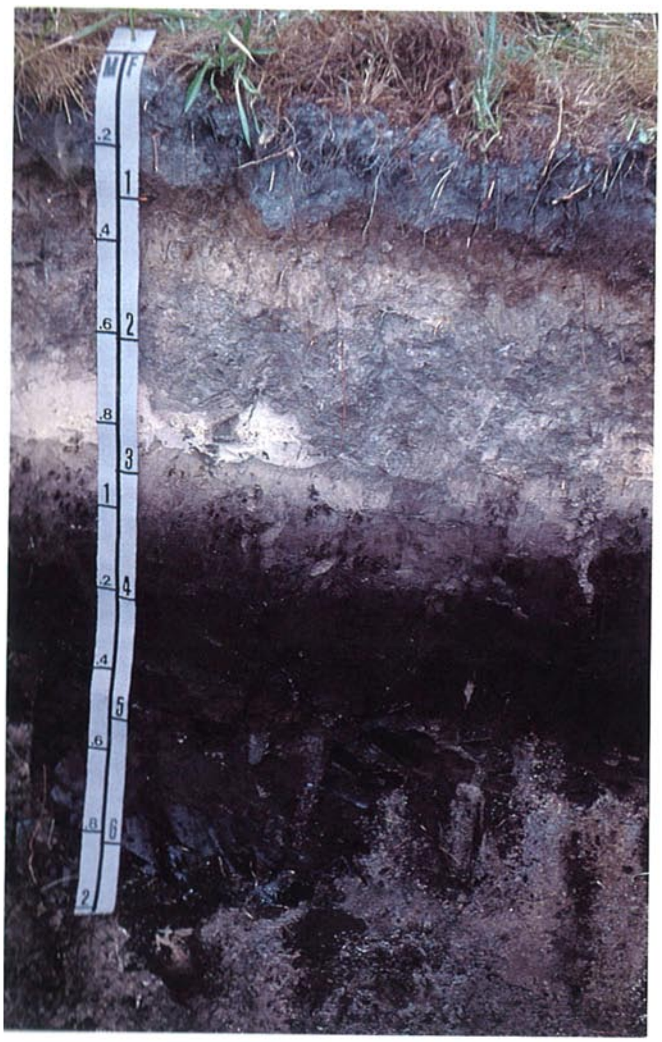


Figure 17.—Typical profile of Boulogne fine sand, 0 to 2 percent slopes. Depth is marked in meters and feet.

Figure 18.—Typical profile of Kershaw fine sand, 2 to 8 percent slopes. The shovel is 42 inches long.

Figure 19.—Typical profile of Mascotte fine sand, 0 to 2 percent slopes. Depth is marked in meters and feet.

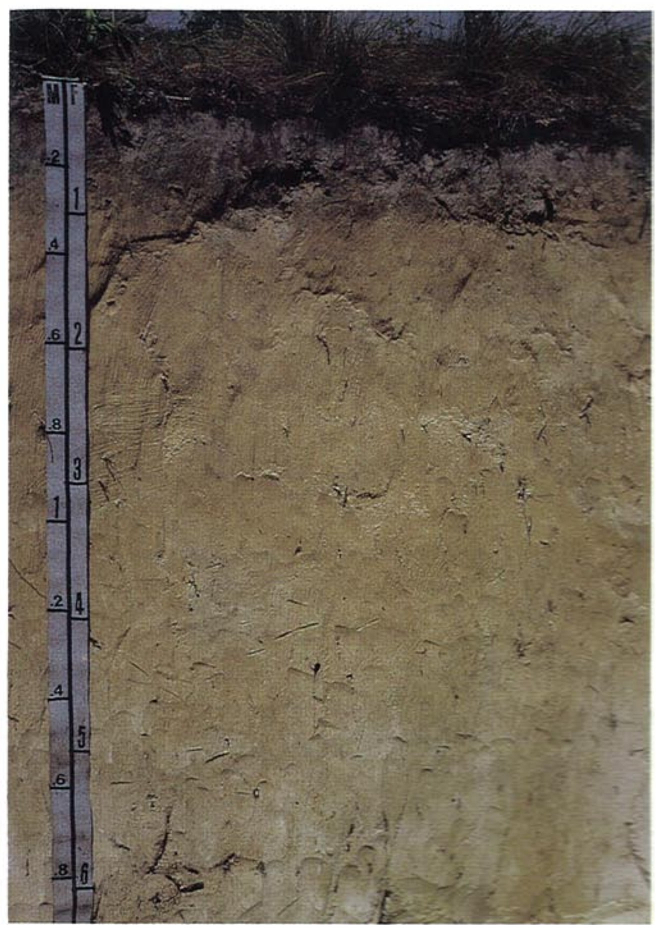


Figure 20.—Typical profile of Ortega fine sand, 0 to 5 percent slopes. Depth is marked in meters and feet.

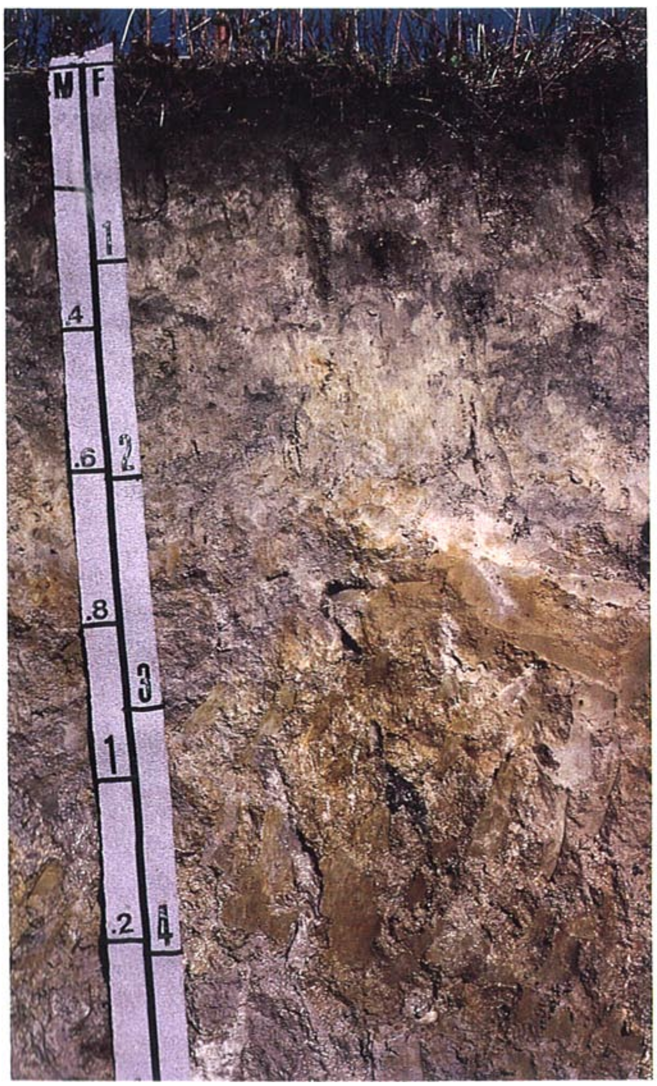


Figure 21.—Typical profile of Pelham fine sand, 0 to 2 percent slopes. Depth is marked in meters and feet.

Figure 22.—Typical profile of Ridgewood fine sand in an area of Hurricane and Ridgewood soils, 0 to 5 percent slopes. Depth is marked in meters and feet.

Mandarin Series

The Mandarin series consists of nearly level, somewhat poorly drained, sandy soils. These soils formed in thick beds of marine sand. They are in the slightly elevated flatwoods. The soils are moderately permeable. Generally, the high water table is at a depth of 18 to 42 inches. Slopes are convex and range from 0 to 2 percent. The Mandarin soils are sandy, siliceous, thermic Oxyaquic Alorthods.

The Mandarin soils are closely associated on the landscape with Boulogne, Cornelia, Corolla, Fripp, Leon, Lynn Haven, Ridgewood, Rutlege, and Tisonia soils. Boulogne and Leon soils are poorly drained and in flatwoods. Boulogne soils do not have an E horizon. Cornelia soils are excessively drained, have spodic horizons below a depth of 50 inches, and are on rises. Corolla and Fripp soils do not have spodic horizons and are on dunes. Corolla soils are somewhat poorly drained and moderately well drained, and Fripp soils are excessively drained. Lynn Haven soils are very poorly drained and on flats. Ridgewood soils are somewhat poorly drained, do not have spodic horizons, and are on rises and knolls. Rutlege soils are very poorly drained and on flood plains. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Mandarin fine sand, 0 to 2 percent slopes; in a wooded area, approximately 3,000 feet north of Atlantic Boulevard, 0.7 mile west of Girvin Road, NE$^1/_4$NW$^1/_4$, sec. 22, T. 2 S., R. 28 E.

A—0 to 4 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; very friable; extremely acid; clear wavy boundary.

E1—4 to 8 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; extremely acid; clear wavy boundary.

E2—8 to 26 inches; light gray (10YR 7/1) fine sand; single grained; loose; strongly acid; abrupt wavy boundary.

Bh1—26 to 30 inches; very dark grayish brown (10YR 3/2) fine sand; massive; very friable; noncemented; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

Bh2—30 to 35 inches; very dark brown (10YR 2/2) fine sand; few medium faint dark brown (10YR 3/3) soft masses; massive; very friable; noncemented; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

Bh3—35 to 40 inches; black (5YR 2/1) fine sand; few fine faint yellowish brown (10YR 5/4) iron masses; massive; friable; noncemented; sand grains coated with organic matter; very strongly acid; gradual wavy boundary.

BE—40 to 46 inches; brown (10YR 5/3) fine sand; single grained; loose; moderately acid; gradual smooth boundary.

E´1—46 to 56 inches; light gray (10YR 7/2) fine sand; single grained; loose; slightly acid; gradual wavy boundary.

E´2—56 to 62 inches; white (10YR 8/1) fine sand; few medium faint very pale brown (10YR 8/2) bodies; single grained; loose; neutral; gradual wavy boundary.

E´3—62 to 73 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; neutral; gradual wavy boundary.

B´h—73 to 80 inches; black (10YR 2/1) fine sand; few fine distinct white (10YR 8/1) clean uncoated sand grains; massive; friable; sand grains coated with organic matter; moderately acid.

Texture is dominantly fine sand throughout the profile but includes loamy fine sand in the Bh horizon. Reaction ranges from extremely acid to moderately acid in the A, E, and Bh horizons and from extremely acid to neutral in the BE´, E´, and B´h horizons. Depth to the Bh horizon is less than 30 inches.

The A horizon has hue of 10YR, value of 2 to 6, and chroma of 1. It is 2 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It is 10 to 24 inches thick.

The Bh horizon has hue of 2.5YR, value of 2 or 3, and chroma of 2 to 4; hue of 5YR, value of 2 or 3, and chroma of 1 to 4; hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 2 or 4, and chroma of 1. In some pedons light gray (10YR 7/1) and gray (10YR 6/1) tongues extend from the horizon above. The Bh horizon is fine sand or loamy fine sand. It is 5 to 34 inches thick.

The BE or BC horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 or 4. The horizon is 0 to 22 inches thick.

Some pedons have an E´g horizon. This horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It is 0 to 30 inches thick.

The B´h horizon has the same range in color and texture as the Bh horizon.

Some pedons do not have a bisequum consisting of the E´ and B´h horizons.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 3.

Mascotte Series

The Mascotte series consists of nearly level, poorly drained soils. These soils formed in thick sandy and loamy marine sediments. They are in flatwoods. The soils are moderately slowly permeable and moderately

permeable. Generally, the high water table is at a depth of 6 to 18 inches. Slopes are linear and range from 0 to 2 percent. The Mascotte soils are sandy, siliceous, thermic Ultic Alaquods.

The Mascotte soils are closely associated on the landscape with Albany, Goldhead, Lynchburg, Lynn Haven, Pelham, Sapelo, Stockade, Surrency, Tisonia, and Yonges soils. Albany soils are somewhat poorly drained and on rises. Goldhead, Lynchburg, Pelham, and Yonges soils do not have spodic horizons. Goldhead soils are in seep areas on side slopes, and Lynchburg, Pelham, and Yonges soils are on flats. Lynn Haven soils are very poorly drained, do not have argillic horizons, and are on flats. Sapelo soils have argillic horizons below a depth of 40 inches. Stockade and Surrency soils are very poorly drained, have umbric epipedons, and are in depressions and on flood plains. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Mascotte fine sand, 0 to 2 percent slopes (fig. 19); in a wooded area, approximately 500 feet north of Duval Station Road, 2,000 feet east of Starrett Road, Land Grant 37, T. 1 N., R. 27 E.

A—0 to 5 inches; black (10YR 2/1) fine sand; weak fine granular structure; very friable; extremely acid; clear wavy boundary.

E1—5 to 8 inches; gray (10YR 5/1) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

E2—8 to 15 inches; light brownish gray (10YR 6/2) fine sand; single grained; loose; strongly acid; clear smooth boundary.

Bh1—15 to 21 inches; black (5YR 2/1) loamy fine sand; massive; friable; noncemented; sand grains well coated with organic matter; very strongly acid; abrupt smooth boundary.

Bh2—21 to 23 inches; very dusky red (2.5YR) 2/2) loamy fine sand; moderate medium subangular blocky structure; friable; sand grains well coated with organic matter; very strongly acid; clear wavy boundary.

Bh3—23 to 25 inches; dark reddish brown (5YR 3/3) loamy fine sand; massive; friable; noncemented; sand grains well coated with organic matter; very strongly acid; clear wavy boundary.

BE—25 to 28 inches; dark brown (7.5YR 4/4) loamy fine sand; many coarse distinct light gray (10YR 7/2) bodies of uncoated sand grains; few fine faint brownish yellow (10YR 6/6) and many fine faint light yellowish brown (10YR 6/4) iron masses; weak fine subangular blocky structure; very strongly acid; friable; clear wavy boundary.

Btg1—28 to 46 inches; coarsely mottled gray (10YR 6/1) and yellowish red (5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Btg2—46 to 58 inches; coarsely mottled light gray (N 7/0), strong brown (7.5YR 5/8), and red (10R 4/8) fine sandy loam; moderate fine subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Cg—58 to 80 inches; gray (5Y 6/1) fine sand; common medium faint light brownish gray (10YR 6/2) bodies of uncoated sand grains; single grained; loose; moderately acid.

Depth to the Bh horizon ranges from 10 to 29 inches, and depth to the Bt horizon ranges from 24 to less than 40 inches. Reaction ranges from extremely acid to strongly acid in the solum and from extremely acid to moderately acid in the C horizon.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1. It is 3 to 9 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2.

In some pedons a thin transitional layer occurs at the base of the E horizon. This layer has hue of 10YR, value of 2 to 4, and chroma of 1 or 2; has hue of 2.5Y, value of 4, and chroma of 2; or is neutral in hue and has value of 2. It has many uncoated sand grains and small gray or light gray pockets or streaks. The layer is 0 to 5 inches thick. The combined thickness of the A horizon, E horizon, and transitional layer is less than 30 inches.

The Bh horizon has hue of 2.5YR or 10YR, value of 1 to 3, and chroma of 2 to 4; has hue of 5YR, value of 2 or 3, and chroma of 1 or 3; has hue of 7.5YR, value of 3 or 4, and chroma of 2 to 4; or is neutral in hue and has value of 2. Texture is fine sand or loamy fine sand. The horizon is 4 to 20 inches thick.

The BE horizon has hue of 10YR, value of 3 to 6, and chroma of 3 or has hue of 7.5YR and value and chroma of 4. Texture is fine sand or loamy fine sand. In some pedons this horizon contains bodies of Bh material. The horizon is as much as 9 inches thick.

Some pedons have an E′ horizon. This horizon has hue of 10YR or 2.5YR, value of 5 to 7, and chroma of 2 to 4 or has hue of 2.5Y, value of 5 to 7, and chroma of 2. In some pedons it has brown and gray bodies. Texture is fine sand. The horizon is as much as 8 inches thick.

The Btg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2; has hue of 2.5Y, value of 5 to 7, and chroma of 2; or is neutral in hue and has chroma of 2. Iron masses are in shades of yellow, brown, or red. Texture is fine sandy loam or sandy clay loam. The

clay content averages about 18 to 23 percent but ranges from about 14 to 35 percent. The horizon is 10 to 34 inches thick.

Some pedons have a Cg horizon. This horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2. Texture is fine sand or loamy fine sand. The horizon extends to a depth of 80 inches or more.

Maurepas Series

The Maurepas series consists of nearly level, very poorly drained, organic soils. These soils formed in decomposed organic materials. They are on flood plains that are influenced by tidal action. The soils are rapidly permeable. Generally, the high water table is at or near the surface and areas are frequently flooded for brief periods. Slopes are concave and are 0 to 1 percent. The Maurepas soils are euic, thermic Typic Medisaprists.

The Maurepas soils are closely associated on the landscape with Lynn Haven, Rutlege, Tisonia, and Yulee soils. Lynn Haven, Rutlege, and Yulee soils are mineral. Lynn Haven soils are on flats, Rutlege soils are on flood plains, and Yulee soils are in depressions and on flood plains. Tisonia soils have organic material that is 16 to 52 inches thick and are in tidal marshes.

Typical pedon of Maurepas muck, 0 to 1 percent slopes, frequently flooded; 100 feet south of Timuguana Road and 700 feet east of the Ortega River, Land Grant 42, T. 3 S., R. 26 E.

Oa1—0 to 55 inches; dark reddish brown (5YR 3/2) muck; about 30 percent fiber unrubbed, less than 5 percent fiber rubbed; massive; friable; estimated mineral content of 20 percent; common woody fragments consisting of roots, logs, and stumps; mildly alkaline; gradual smooth boundary.

Oa2—55 to 80 inches; black (10YR 2/1) muck; about 45 percent fiber unrubbed, less than 5 percent fiber rubbed; massive; estimated mineral content of 20 percent; common woody fragments consisting of roots, logs, and stumps; moderately alkaline.

The organic material ranges from 51 to more than 80 inches in thickness. Reaction ranges from moderately acid to moderately alkaline throughout the profile. Salinity is none to slight in more than half of the subsurface and bottom tiers.

The Oe layer, if it occurs, is neutral in hue or has hue of 5YR or 10YR, has value of 3 or less, and has chroma of 2 or less. It contains 40 to 90 percent fiber before rubbing and 20 to 40 percent fiber after rubbing. The horizon is as much as 10 inches thick.

The Oa layer is neutral in hue or has hue of 5YR or 10YR, has value of 2 or 3, and has chroma of 4 or less. It contains 10 to 40 percent fiber before rubbing and less than 10 percent fiber after rubbing. Fibers remaining after rubbing are dominantly woody. A few logs and large fragments of wood are in the lower part of the organic layers in some pedons. The Oa layer is 51 to 80 inches thick.

The organic layers are typically underlain by semifluid gray clay. In some pedons, the layers are underlain by fine sand at a depth of more than 51 inches.

Newhan Series

The Newhan series consists of deep, gently undulating to hilly, excessively drained, sandy soils. These soils formed in thick sandy marine sediments that were reworked by the action of wind and waves. They are on dunes affected by salt spray. The soils are very rapidly permeable. Generally, the high water table is at a depth of more than 72 inches. Slopes are concave or convex and range from 2 to 20 percent. The Newhan soils are thermic, uncoated Typic Quartzipsamments.

The Newhan soils are closely associated on the landscape with Beaches and with Corolla and Fripp soils. Beaches are flooded twice daily by ocean tides. Corolla soils are moderately well drained and somewhat poorly drained and are on the lower dunes. Fripp soils are not affected by salt spray and are vegetated with trees.

Typical pedon of Newhan fine sand in an area of Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes; approximately 7 miles south of Fernandina Beach, Nassau County, Florida, in a wooded area, 0.5 mile east of Florida State Highway A1A, 100 feet south of Burney Boulevard, sec. 20, T. 2 N., R. 28 E.

A—0 to 7 inches; white (10YR 8/1) fine sand; single grained; loose; common fine roots; neutral; gradual wavy boundary.

C—7 to 80 inches; very pale brown (10YR 7/3) fine sand; streaks of brown minerals that are 1 to 5 millimeters thick in the upper part of the horizon and commonly 5 millimeters to 3 centimeters thick in the lower part; single grained; loose; few fine roots; neutral.

The combined thickness of the A and C horizons is more than 72 inches. Reaction ranges from extremely acid to mildly alkaline throughout the profile. Calcareous shell fragments, mostly of sand size, make

up 0 to 25 percent of the soil, by volume. The soil has very few to common grains of brown minerals. The content of silt plus clay is less than 5 percent.

The A horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 3. It is 0 to 8 inches thick.

The C horizon has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 to 3. Colors with low chroma are not indicative of wetness. Small streaks of brown minerals occur in the lower part of this horizon in some pedons.

Ortega Series

The Ortega series consists of nearly level and gently sloping, moderately well drained, sandy soils. These soils formed in thick sandy marine sediments. They are on rises and knolls. The soils are rapidly permeable. Generally, the high water table is at a depth of 42 to 72 inches. Slopes are smooth or convex and range from 0 to 5 percent. The Ortega soils are thermic, uncoated Typic Quartzipsamments.

The Ortega soils are closely associated on the landscape with Hurricane, Kershaw, Kureb, Pottsburg, high, Ridgewood, and Tisonia soils. Hurricane, Pottsburg, high, and Ridgewood soils are somewhat poorly drained. Hurricane and Pottsburg, high, soils have spodic horizons below a depth of 50 inches. Kershaw and Kureb soils are excessively drained and on rises and knolls. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Ortega fine sand, 0 to 5 percent slopes (fig. 20); in a wooded area, approximately 1,100 feet east of St. Johns Bluff Road, 6,400 feet south of Beach Boulevard, NW1/4NE1/4SW1/4, sec. 5, T. 3 S., R. 28 E.

A—0 to 5 inches; grayish brown (10YR 5/2) fine sand; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.

C1—5 to 33 inches; very pale brown (10YR 7/4) fine sand; single grained; loose; strongly acid; clear wavy boundary.

C2—33 to 48 inches; very pale brown (10YR 7/4) fine sand; common fine and medium distinct white (10YR 8/2) bodies of clean uncoated sand grains; few fine distinct reddish yellow (7.5YR 6/8) iron masses; single grained; loose; moderately acid; clear smooth boundary.

C3—48 to 63 inches; white (10YR 8/1) fine sand; common medium distinct brownish yellow (10YR 6/6) and strong brown (7.5YR 5/8) iron masses; single grained; loose; slightly acid; clear smooth boundary.

C4—63 to 82 inches; very pale brown (10YR 8/2) fine sand; common coarse distinct black (5YR 2/1) accumulations of organic matter along root channels; single grained; loose; slightly acid.

Reaction ranges from extremely acid to slightly acid throughout the profile. The content of silt plus clay is less than 5 percent within a depth of 10 to 40 inches.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2. It is 1 to 6 inches thick.

The upper part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8. The thickness of this horizon ranges from 30 to 70 inches. In many pedons the horizon has few or common, fine to coarse bodies of white or light gray uncoated sand grains. The color of these bodies is due to the color of the uncoated sand grains and is not indicative of wetness. Common or many distinct or prominent reddish yellow, strong brown, or yellowish brown iron masses are below a depth of 42 inches.

The lower part of the C horizon has hue of 10YR. It has value of 5 to 7 and chroma of 6 or 8, value of 7 or 8 and chroma of 1 or 2, or value of 7 and chroma of 4. It has common or many redoximorphic features.

Pamlico Series

The Pamlico series consists of nearly level, very poorly drained, organic soils. These soils formed in decomposed organic material underlain by thick loamy and sandy marine and fluvial sediments. They are on flood plains and in depressions. The soils are moderately permeable. In areas on the flood plains, the high water table generally is at or near the surface and the areas are frequently flooded for brief periods. In areas in the depressions, the high water table generally is at or above the surface for very long periods. Slopes are concave and are 0 to 1 percent. The Pamlico soils are sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists.

The Pamlico soils are closely associated on the landscape with Dorovan, Evergreen, Lynn Haven, Rutlege, Tisonia, and Wesconnett soils. Dorovan soils have organic material that is more than 52 inches thick. Evergreen, Lynn Haven, Rutlege, and Wesconnett soils are mineral. Evergreen soils have spodic horizons and histic epipedons. They are on landforms similar to those of the Pamlico soils. Lynn Haven soils have spodic horizons and are on low flats. Rutlege soils are on flood plains. Wesconnett soils have spodic horizons, have less than 8 inches of organic material, and are on landforms similar to those of the Pamlico soils. Tisonia soils have fibric organic

material, have a high content of sulfur, and are in tidal marshes.

Typical pedon of Pamlico muck, depressional, 0 to 1 percent slopes; in a wooded area, approximately 2,000 feet east of Chaffee Road, 1,200 feet south of Normandy Boulevard, NE1/4NW1/4, sec. 7, T. 3 S., R. 25 E.

Oi—2 inches to 0; spongy layer of partially decomposed and undecomposed moss, roots, leaves, and twigs; extremely acid.

Oa1—0 to 6 inches; black (10YR 2/1) muck; about 30 percent fiber unrubbed, 15 percent fiber rubbed; very weak subangular blocky structure; friable; extremely acid; gradual wavy boundary.

Oa2—6 to 30 inches; very dusky red (2.5YR 2/2) muck; about 25 percent fiber unrubbed, 5 percent fiber rubbed; very weak subangular blocky structure; friable; extremely acid; gradual wavy boundary.

Oa3—30 to 35 inches; dark brown (7.5YR 3/2) muck; less than 5 percent fiber rubbed; friable; extremely acid; gradual wavy boundary.

2Cg1—35 to 60 inches; very dark grayish brown (10YR 3/2) fine sand; single grained; loose; strongly acid; gradual wavy boundary.

2Cg2—60 to 80 inches; dark brown (7.5YR 3/2) fine sand; single grained; loose; strongly acid.

The organic material is 16 to 51 inches thick over dominantly sandy sediments. Reaction is extremely acid (less than 4.5 in 0.01 molar calcium chloride) in the organic layers and ranges from extremely acid to strongly acid in the underlying mineral layers.

The Oi or Oe horizon is neutral in hue or has hue of 7.5YR or 10YR, has value of 2 or 3, and has chroma of 2 or less. It contains 40 to 90 percent fiber before rubbing and 20 to 60 percent fiber after rubbing. The horizon is 0 to 4 inches thick.

The Oa horizon is neutral in hue or has hue of 7.5YR or 10YR, has value of 2 or 3, and has chroma of 2 or less. It contains 10 to 33 percent fiber before rubbing and less than 10 percent fiber after rubbing. The horizon is 16 to 51 inches thick.

The Cg horizon is neutral in hue or has hue of 10YR, has value of 2 to 6, and has chroma of 2 or less. The weighted average of the upper 12 inches of the Cg horizon or of the part of the Cg horizon that is within a depth of 51 inches, whichever is thickest, is sandy. The horizon is typically fine sand or loamy fine sand. In some pedons, thin subhorizons of the Cg horizon within a depth of 51 inches are loamy, typically fine sandy loam or sandy clay loam. Below a depth of 51 inches, texture is variable and ranges from fine sand to sandy clay loam.

Pelham Series

The Pelham series consists of nearly level, poorly drained soils. These soils formed in thick deposits of sandy and loamy marine sediments. They are on flats. The soils are moderately permeable and moderately slowly permeable. Generally, the high water table is at a depth of less than 12 inches on flats and at or above the surface in depressions. Slopes are linear and range from 0 to 2 percent. The Pelham soils are loamy, siliceous, thermic Arenic Paleaquults.

The Pelham soils are closely associated on the landscape with Albany, Blanton, Goldhead, Lynchburg, Mascotte, Sapelo, Surrency, Tisonia, Yonges, and Yulee soils. Albany and Blanton soils have argillic horizons below a depth of 40 inches and are on rises and knolls. Albany soils are somewhat poorly drained, and Blanton soils are moderately well drained to somewhat excessively drained. Goldhead soils have argillic horizons with high base saturation and are in seep areas on side slopes. Lynchburg soils are somewhat poorly drained, have argillic horizons within a depth of 20 inches, and are on rises and knolls. Mascotte and Sapelo soils have spodic horizons and are in flatwoods. Surrency and Yulee soils are very poorly drained and are in depressions and on flood plains. Tisonia soils are very poorly drained and organic and are in tidal marshes. Yonges soils have argillic horizons at a depth of less than 20 inches.

Typical pedon of Pelham fine sand, 0 to 2 percent slopes (fig. 21); in a vacant lot, approximately 650 feet south of Edgewood Avenue, 400 feet east of U.S. Highway 1, Land Grant 44, T. 1 S., R. 26 E.

Ap—0 to 6 inches; very dark gray (10YR 3/1) fine sand; fine granular structure; friable; very strongly acid; clear wavy boundary.

E1—6 to 14 inches; grayish brown (10YR 5/2) fine sand; very fine granular structure; very friable; very strongly acid; gradual wavy boundary.

E2—14 to 21 inches; light gray (10YR 7/2) fine sand; few fine distinct yellow (10YR 7/6) and strong brown (7.5YR 5/8) iron masses; single grained; loose; very strongly acid; clear wavy boundary.

Btg1—21 to 26 inches; light brownish gray (10YR 6/2) fine sandy loam; common medium distinct yellow (10YR 7/6) and few fine distinct strong brown (7.5YR 5/8) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg2—26 to 44 inches; light brownish gray (10YR 6/2) sandy clay loam; few fine distinct strong brown (7.5YR 5/8) and common medium distinct reddish yellow (7.5YR 7/6) iron masses; weak coarse

subangular blocky structure; firm; sand grains bridged and coated with clay; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg3—44 to 60 inches; light brownish gray (10YR 6/2) sandy clay loam; many coarse faint brownish yellow (10YR 6/6) and common medium distinct strong brown (7.5YR 5/8) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg4—60 to 69 inches; light brownish gray (10YR 6/2) fine sandy loam; common medium distinct strong brown (7.5YR 5/8) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from extremely acid to strongly acid throughout the profile except where lime has been added. The argillic horizon is at a depth of 20 to 40 inches.

The A or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is 3 to 8 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It is 15 to 32 inches thick. The quantity of iron masses in shades of yellow, brown, or red ranges from none to common.

Some pedons have a very dark gray (10YR 3/1) or dark gray (10YR 4/1) transitional BEg horizon between the E and Btg horizons. This horizon is 0.5 inch to 3.0 inches thick.

The Btg horizon has hue of 10YR. 2.5Y, 5Y, or 5GY, value of 4 to 7, and chroma of 1 or 2. The quantity of fine or medium brown, yellow, or red iron masses ranges from none to many throughout the horizon. Texture is fine sandy loam or sandy clay loam.

Penney Series

The Penney series consists of nearly level and gently sloping, excessively drained, sandy soils. These soils formed in thick sandy marine sediments. They are on rises. The soils are rapidly permeable. Generally, the high water table is at a depth of more than 72 inches. Slopes are convex and range from 0 to 5 percent. The Penney soils are thermic, uncoated Typic Quartzipsamments.

The Penney soils are closely associated on the landscape with Blanton and Kershaw soils. Blanton soils are moderately well drained to somewhat excessively drained, have argillic horizons below a depth of 40 inches, and are on rises and knolls. Kershaw soils do not have lamellae.

Typical pedon of Penney fine sand, 0 to 5 percent slopes; in a wooded area, approximately 0.1 mile north of Moncrief Road and 1.5 miles west of Lem Turner Road, Land Grant 39, T. 1 S., R. 26 E.

A—0 to 5 inches; grayish brown (10YR 5/2) fine sand; weak fine granular structure; loose; strongly acid; clear smooth boundary.

E1—5 to 11 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; strongly acid; gradual wavy boundary.

E2—11 to 30 inches; very pale brown (10YR 7/4) fine sand; single grained; loose; very strongly acid; gradual smooth boundary.

E3—30 to 48 inches; very pale brown (10YR 7/4) fine sand; single grained; loose; common very pale brown (10YR 8/2) bodies; very strongly acid; clear smooth boundary.

E/B—48 to 80 inches; mixed very pale brown (10YR 7/4) fine sand that has few or common pockets of white (10YR 8/2) fine sand; single grained; loose; common strong brown (7.5YR 5/8) lamellae of loamy fine sand that are $^1/_{32}$ to $^1/_4$ inch thick and 1 to 5 inches apart; sand grains in lamellae are coated; very strongly acid.

The solum is 80 inches or more thick. The content of silt plus clay is less than 5 percent at a depth of 10 to 40 inches. Thin lamellae, $^1/_{16}$ to $^1/_4$ inch thick, are at a depth of 41 to 54 inches and extend to a depth of more than 80 inches. The lamellae range from fine sand to fine sandy loam. Reaction ranges from extremely acid to moderately acid throughout the profile. Texture is dominantly fine sand.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. It typically has few or common fine or medium bodies that have hue of 10YR, value of 7 or 8, and chroma of 1 or 2. The color of these bodies is due to the color of the uncoated sand grains and is not indicative of wetness.

The E part of the E/B horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. It has small pockets of light gray or white sand grains in some pedons. The E part is 2 to 8 inches thick between the lamellae.

The B part of the E/B horizon occurs as lamellae that have hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. The lamellae range from $^1/_{32}$ to $^1/_4$ inch in thickness and from $^1/_2$ inch to 24 inches in length. These lamellae occur at depths of 50 to 80 inches and extend to a depth of more than 80 inches. They generally increase in thickness as depth increases.

Pottsburg Series

The Pottsburg series consists of nearly level and gently sloping, poorly drained and somewhat poorly drained, sandy soils. These soils formed in thick sandy marine sediments. They are in flatwoods, on rises, and on knolls. The soils are moderately permeable. Generally, the high water table is at a depth of 6 to 24 inches. Slopes are smooth and convex and range from 0 to 3 percent. The Pottsburg soils are sandy, siliceous, thermic Grossarenic Alaquods.

The Pottsburg soils are closely associated on the landscape with Boulogne, Cornelia, Evergreen, Hurricane, Leon, Lynn Haven, Ridgewood, Rutlege, Tisonia, and Wesconnett soils. Boulogne and Leon soils have a spodic horizon within a depth of 30 inches. Cornelia soils are excessively drained, have spodic horizons below a depth of 50 inches, and are on rises. Evergreen and Wesconnett soils are very poorly drained and in depressions. Evergreen soils have histic epipedons, and Wesconnett soils have umbric epipedons. Hurricane soils have a high water table at a depth of 24 to 42 inches. Lynn Haven soils are very poorly drained, have a spodic horizon at a depth of less than 30 inches, and are on flats. Ridgewood soils are somewhat poorly drained, do not have spodic horizons, and are on rises and knolls. Rutlege soils are very poorly drained, do not have a spodic horizon, and are on flood plains. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Pottsburg fine sand, 0 to 2 percent slopes; in a wooded area, approximately 0.2 mile east of U.S. Highway 1, about 0.3 mile south of Greenland Road, NW¼SE¼SW¼, sec. 7, T. 4 S., R. 28 E.

A—0 to 3 inches; gray (10YR 5/1) fine sand; weak fine granular structure; very friable; very strongly acid; gradual smooth boundary.

E1—3 to 10 inches; brown (10YR 5/3) fine sand; common faint light gray (10YR 7/1) bodies of uncoated sand grains; weak fine granular structure; very friable; moderately acid; gradual wavy boundary.

E2—10 to 34 inches; grayish brown (10YR 5/2) fine sand; common coarse faint pale brown (10YR 6/3) and few faint yellowish brown (10YR 5/6) iron masses; single grained; loose; moderately acid; gradual smooth boundary.

E3—34 to 57 inches; light gray (10YR 7/1) fine sand; few medium faint very pale brown (10YR 8/2) bodies; single grained; loose; slightly acid; gradual smooth boundary.

Bh—57 to 80 inches; dark reddish brown (5YR 2/2) fine sand; common fine faint black (10YR 2/1) bodies; massive; very friable; weakly cemented in parts; sand grains well coated with organic matter; strongly acid.

The thickness of the solum is 80 inches or more. Depth to the spodic horizon ranges from 50 to 79 inches. Reaction ranges from extremely acid to slightly acid in the A and E horizons and from extremely acid to moderately acid in the Bh horizon.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. It is 3 to 8 inches thick.

The upper part of the E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 to 3, and the lower part has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. In some pedons the E horizon has few or common, fine to coarse, faint very pale brown, pale brown, or yellowish brown iron masses and light gray bodies of clean sand grains. The horizon is 43 to 70 inches thick.

Some pedons have a transitional horizon between the E and Bh horizons. This horizon is an EB, BE, or B/E horizon. It is fine sand or loamy fine sand. Lenses of C material or spodic bodies of Bh material that are thinly to moderately coated with organic matter occur in some pedons.

The Bh horizon has hue of 5YR, value of 2 to 4, and chroma of 1 to 4; hue of 7.5YR, value of 3 to 5, and chroma of 1 to 4; or hue of 10YR, value of 2 to 5, and chroma of 1 to 4. Parts of this horizon are weakly cemented.

Ridgewood Series

The Ridgewood series consists of nearly level and gently sloping, somewhat poorly drained, sandy soils. These soils formed in thick sandy marine sediments. They are on rises and knolls. The soils are rapidly permeable. Generally, the high water table is at a depth of 18 to 42 inches. Slopes are convex and range from 0 to 5 percent. The Ridgewood soils are thermic, uncoated Aquic Quartzipsamments.

The Ridgewood soils are closely associated on the landscape with Hurricane, Leon, Mandarin, Ortega, Pottsburg, Tisonia, and Wesconnett soils. Hurricane and Pottsburg soils have spodic horizons below a depth of 50 inches. Leon, Mandarin, and Wesconnett soils have spodic horizons within a depth of 30 inches. Leon soils are poorly drained and in flatwoods, Mandarin soils are somewhat poorly drained and in the slightly elevated flatwoods, and Wesconnett soils are very poorly drained and in depressions. Ortega soils are moderately well drained and on rises and knolls. Tisonia soils are very poorly drained and organic and are in tidal marshes.

Typical pedon of Ridgewood fine sand in an area of

Hurricane and Ridgewood soils, 0 to 5 percent slopes (fig. 22); in Nassau County, Florida, in a wooded area, approximately 3.5 miles east of Yulee, 0.25 mile east of Rayioner Road, 0.9 mile south of Florida State Highways 200A and A1A, NW1/4NW1/4, sec. 26, T. 2 S., R. 28 E.

A—0 to 7 inches; gray (10YR 5/1) fine sand; common medium distinct dark brown (10YR 4/3) bodies; single grained; loose; few coarse and medium and many fine roots; extremely acid; clear wavy boundary.

C1—7 to 24 inches; light yellowish brown (2.5Y 6/4) fine sand; common fine distinct very dark gray (10YR 3/1) organic specks; single grained; loose; common fine and medium roots; very strongly acid; gradual wavy boundary.

C2—24 to 29 inches; light yellowish brown (2.5Y 6/4) fine sand; few fine distinct very dark gray (10YR 3/1) organic specks; common medium distinct strong brown (7.5YR 5/8) iron masses; single grained; loose; common fine and medium roots; very strongly acid; gradual wavy boundary.

C3—29 to 35 inches; pale brown (10YR 6/3) fine sand; common medium distinct strong brown (7.5YR 5/8) iron masses and common medium faint light gray (10YR 6/2) bodies; single grained; loose; common fine roots; very strongly acid; gradual wavy boundary.

C4—35 to 46 inches; light gray (10YR 7/2) fine sand; common medium distinct yellowish brown (10YR 5/6) and common fine distinct strong brown (7.5YR 5/8) iron masses; single grained; loose; few fine roots; very strongly acid; gradual wavy boundary.

C5—46 to 80 inches; light gray (10YR 7/1) fine sand; few fine distinct brownish yellow (10YR 6/8) bodies; single grained; loose; very strongly acid.

The thickness of the sandy material is 80 inches or more. Reaction ranges from very strongly acid to neutral throughout the profile. The content of silt plus clay in the 10- to 40-inch control section is less than 5 percent.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. It is 4 to 9 inches thick.

The C horizon has hue of 10YR to 5Y. It has value of 5 to 8 and chroma of 2 to 8 or value of 4 and chroma of 3. In many pedons the horizon has few or common, fine to coarse bodies or pockets of white or light gray uncoated sand grains. The color of these bodies or pockets is due to the color of the uncoated sand grains and is not indicative of wetness. Common or many distinct or prominent iron masses in shades of yellow, brown, or red occur in the C horizon at depths of 18 to 42 inches.

Rutlege Series

The Rutlege series consists of nearly level, very poorly drained, sandy soils. They formed in thick sandy marine sediments. They are on flood plains. The soils are rapidly permeable. The high water table generally is at or near the surface, and areas are subject to frequent flooding for brief periods. Slopes are concave and range from 0 to 2 percent. The Rutlege soils are sandy, siliceous, thermic Typic Humaquepts.

The Rutlege soils are closely associated on the landscape with Boulogne, Leon, Lynn Haven, Mandarin, Maurepas, Pamlico, Pottsburg, and Tisonia soils. Boulogne, Leon, Lynn Haven, Mandarin, and Pottsburg soils have spodic horizons. Boulogne and Leon soils are poorly drained and in flatwoods. Lynn Haven soils are very poorly drained and on flats. Mandarin soils are somewhat poorly drained and in the slightly elevated flatwoods. Pottsburg soils are poorly drained and somewhat poorly drained and are in flatwoods, on rises, and on knolls. Maurepas, Pamlico, and Tisonia soils are organic. Maurepas soils are on flood plains influenced by tides, Pamlico soils are in depressions and on flood plains, and Tisonia soils are in tidal marshes.

Typical pedon of Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded; in a wooded area, approximately 1.5 miles south of 103rd Street, 500 feet west of Middleburg Road, NE1/4SW1/4, sec. 21, T. 3 S., R. 25 E.

A1—0 to 10 inches; black (10YR 2/1) mucky fine sand; moderate medium granular structure; very friable; many fine and medium and few coarse roots; strongly acid; gradual wavy boundary.

A2—10 to 14 inches; very dark gray (10YR 3/1) fine sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

Cg1—14 to 20 inches; dark gray (10YR 4/1) fine sand; single grained; loose; few fine roots; very strongly acid; clear wavy boundary.

Cg2—20 to 38 inches; gray (10YR 5/1) fine sand; single grained; loose; very strongly acid; clear wavy boundary.

Cg3—38 to 80 inches; light gray (10YR 6/1) fine sand; single grained; loose; very strongly acid.

The content of silt plus clay in the 10- to 40-inch control section is 5 to 15 percent. Reaction is extremely acid or very strongly acid throughout the profile unless the surface layer has been limed.

The A horizon is neutral in hue or has hue of 10YR or 5Y, has value of 2 or 3, and has chroma of 2 or less. It is more than 10 to 24 inches thick.

The C horizon is neutral in hue or has hue of 10YR or 5Y, has value of 4 to 7, and has chroma of 2 or less. Redoximorphic features are in shades of yellow, brown, or red. Texture is fine sand or loamy fine sand.

Sapelo Series

The Sapelo series consists of nearly level, poorly drained soils. These soils formed in thick loamy and sandy sediments. They are in flatwoods. The soils are moderately slowly permeable. Generally, the high water table is at a depth of 6 to 18 inches. Slopes are linear and range from 0 to 2 percent. The Sapelo soils are sandy, siliceous, thermic Ultic Alaquods.

The Sapelo soils are closely associated on the landscape with Albany, Blanton, Goldhead, Lynn Haven, Mascotte, Pelham, Stockade, and Surrency soils. Albany soils are somewhat poorly drained and on rises and knolls. Blanton soils are moderately well drained to somewhat excessively drained and on rises and knolls. Goldhead and Lynn Haven soils are in seep areas on side slopes. Goldhead soils do not have spodic horizons. Lynn Haven soils are very poorly drained and have umbric epipedons. Mascotte soils are poorly drained and have argillic horizons within a depth of 40 inches. Pelham soils do not have spodic horizons and are on flats. Stockade and Surrency soils are very poorly drained and are in depressions and on flood plains.

Typical pedon of Sapelo fine sand, 0 to 2 percent slopes; in a wooded area, 40 feet east of Fang Road, 350 feet north of Terrell Road, SW1/4SE1/4NE1/4, sec. 28, T. 1 N., R. 26 E.

A1—0 to 3 inches; black (10YR 2/1) fine sand; weak fine granular structure; very friable; extremely acid; clear smooth boundary.

A2—3 to 6 inches; dark gray (10YR 4/1) fine sand; single grained; loose; very strongly acid; clear smooth boundary.

E—6 to 23 inches; light brownish gray (10YR 6/2) fine sand; few fine faint light yellowish brown (10YR 5/6) iron masses; single grained; loose; slightly acid; clear wavy boundary.

Bh1—23 to 30 inches; mixed black (5YR 2/1) and dark reddish brown (5YR 2/2) fine sand; massive; friable; noncemented; sand grains well coated with organic matter; very strongly acid; gradual wavy boundary.

Bh2—30 to 32 inches; mixed black (5YR 2/1), dark reddish brown (5YR 3/2), and very dusky red (2.5YR 2/2) fine sand; massive; friable; noncemented; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

E/Bh—32 to 38 inches; dark brown (10YR 4/3) fine sand; common coarse dark reddish brown (5YR 3/2) bodies of Bh material; massive; very friable; strongly acid; gradual wavy boundary.

E′—38 to 56 inches; very pale brown (10YR 7/4) fine sand; few fine distinct dark yellowish brown (10YR 4/4) and dark brown (10YR 3/3) bodies; single grained; loose; many medium roots; extremely acid; clear wavy boundary.

Btg1—56 to 62 inches; gray (5Y 5/1) sandy clay loam; few fine prominent yellowish brown (10YR 5/6) and brownish yellow (10YR 6/6) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Btg2—62 to 80 inches; gray (5Y 5/1) fine sandy loam; common medium distinct dark brown (10YR 4/3) and many coarse prominent yellowish red (5YR 5/8) iron masses; weak coarse subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; strongly acid.

The thickness of the solum ranges from 70 to 90 inches or more. Reaction ranges from extremely acid to slightly acid throughout the profile except where the surface layer has been limed. The Bh horizon is at a depth of 10 to 30 inches, and the Btg horizon is at a depth of 40 to 70 inches.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1. It is 3 to 8 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. It is 7 to 22 inches thick.

The Bh horizon has hue of 2.5YR to 10YR and value and chroma of 2 to 4. Texture is fine sand or loamy fine sand. The horizon is 5 to 19 inches thick.

The E/Bh horizon has hue of 10YR, value of 4 to 7, and chroma of 1 to 3. It has common fine to coarse bodies of Bh material having the same colors as the Bh horizon. The E/Bh horizon is 5 to 20 inches thick.

The E′ horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 to 4. In some pedons it has common or many red, yellow, or brown iron masses. The horizon is 20 to 31 inches thick.

The Btg horizon has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 or 2. It has few to many iron masses in shades of yellow, red, or brown. Texture is fine sandy loam or sandy clay loam. Pockets of sand and clay occur in some pedons.

The C horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2. Texture is fine sand or loamy fine sand.

Stockade Series

The Stockade series consists of nearly level, very poorly drained soils. These soils formed in thick sandy and loamy marine sediments. They are in depressions. The soils are slowly permeable and moderately slowly permeable. Generally, the high water table is at or above the surface for very long periods. Slopes are concave and range from 0 to 2 percent. The Stockade soils are fine-loamy, mixed, thermic Typic Umbraqualfs.

The Stockade soils are closely associated on the landscape with Mascotte, Pelham, Sapelo, Surrency, Yonges, and Yulee soils. Mascotte and Sapelo soils are poorly drained, have spodic horizons, and are in flatwoods. Pelham and Yonges soils are poorly drained and on flats. Surrency soils have argillic horizons with low base saturation. Yulee soils have mollic epipedons, a clayey subsoil, and a clayey substratum.

Typical pedon of Stockade fine sandy loam, depressional, 0 to 2 percent slopes; in a wooded area, approximately 2,000 feet north of Atlantic Boulevard, 1.5 miles west of Girvin Road, Land Grant 39, T. 2 S., R. 28 E.

A—0 to 12 inches; black (N 2/0) fine sandy loam; weak fine subangular blocky structure; very friable; common fine roots; strongly acid; gradual wavy boundary.

Btg1—12 to 26 inches; very dark gray (10YR 3/1) sandy clay loam; few fine distinct yellowish brown (10YR 5/6) iron masses and few fine faint dark grayish brown (10YR 4/2) bodies; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; slightly acid; gradual smooth boundary.

Btg2—26 to 46 inches; dark gray (10YR 4/1) sandy clay loam; weak medium subangular blocky structure; few fine faint brown (10YR 4/3) streaks of sand; friable; sand grains bridged and coated with clay; few faint clay films on faces of peds; neutral; clear wavy boundary.

Cg—46 to 65 inches; dark grayish brown (10YR 4/2) and light brownish gray (10YR 6/2) fine sand; massive; very friable; neutral.

The thickness of the solum ranges from 40 to 60 inches. Reaction ranges from strongly acid to slightly acid in the A horizon and from moderately acid to moderately alkaline in the Btg and C horizons.

The A horizon is neutral in hue or has hue of 10YR, has value of 2 or 3, and has chroma of 2 or less.

A thin BE horizon occurs in some pedons. This horizon is neutral in hue or has hue of 10YR, has value of 4 or 5, and has chroma of 2 or less. Texture is sandy loam or fine sandy loam.

The Btg horizon is neutral in hue or has hue of 10YR, has value of 3 to 6, and has chroma of 2 or less. In some pedons the horizon has brown or yellow iron masses. Clay content ranges from 18 to 30 percent, and silt content is less than 20 percent. Where the horizon has value of less than 4, organic matter content is less than 1 percent. Common fine or medium accumulations of soft calcium carbonate occur in the lower part of this horizon in some pedons.

The Cg horizon is neutral in hue or has hue of 10YR to 5Y, has value of 4 to 7, and has chroma of 2 or less. Texture is dominantly sand or loamy sand but includes stratified sandy clay, sandy clay loam, fine sandy loam, loamy fine sand, and fine sand.

A 2C horizon occurs in some pedons. It is greenish gray marl.

Surrency Series

The Surrency series consists of nearly level, very poorly drained soils. These soils formed in thick sandy and loamy marine sediments. They occur on flood plains and in depressions. The soils are moderately permeable and moderately slowly permeable. In areas on flood plains, the high water table generally is at or near the surface and the areas are subject to frequent flooding for brief periods. In areas in depressions, the high water table generally is at or above the soil surface for very long periods. Slopes are concave and range from 0 to 2 percent. The Surrency soils are loamy, siliceous, thermic Arenic Umbric Paleaquults.

The Surrency soils are closely associated on the landscape with Albany, Blanton, Goldhead, Mascotte, Pelham, Sapelo, Stockade, Tisonia, Yonges, and Yulee soils. Albany and Blanton soils have argillic horizons below a depth of 40 inches and are on rises and knolls. Albany soils are somewhat poorly drained, and Blanton soils are moderately well drained to somewhat excessively drained. Goldhead, Pelham, and Yonges soils are poorly drained and do not have umbric epipedons. Pelham and Yonges soils are on flats, and Goldhead soils are in seep areas on side slopes. Mascotte and Sapelo soils are poorly drained, have spodic horizons, and are in flatwoods. Stockade soils have an argillic horizon with high base saturation. Tisonia soils are organic and in tidal marshes. Yulee soils have mollic epipedons, a clayey subsoil, and a clayey substratum.

Typical pedon of Surrency loamy fine sand, depressional, 0 to 2 percent slopes; in a wooded area,

approximately 150 feet north of Owens Road, 1.5 miles west of Interstate Highway 95, SE¼SE¼NE¼, sec. 23, T. 1 N., R. 26 E.

A1—0 to 14 inches; black (10YR 2/1) loamy fine sand; common medium distinct gray (10YR 5/1) bodies of clean sand grains; weak fine granular structure; very friable; very strongly acid; gradual smooth boundary.

A2—14 to 18 inches; dark brown (7.5YR 3/2) fine sand; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.

E—18 to 26 inches; light brownish gray (10YR 6/2) fine sand; few fine distinct strong brown (7.5YR 5/8) iron masses; single grained; loose; very strongly acid; abrupt wavy boundary.

Btg1—26 to 38 inches; dark grayish brown (10YR 4/2) fine sandy loam; common medium faint light gray (10YR 7/2) iron depletions and few fine faint dark brown (10YR 3/3) iron masses; weak fine subangular blocky structure; friable; very strongly acid; gradual smooth boundary.

Btg2—38 to 49 inches; dark gray (10YR 4/1) fine sandy loam; common medium faint light brownish gray (10YR 6/2) iron depletions; weak fine subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Btg3—49 to 70 inches; greenish gray (5GY 6/1) fine sandy loam; weak coarse subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Cg—70 to 80 inches; greenish gray (5GY 5/1) sandy clay loam; massive; friable; extremely acid.

The thickness of the solum ranges from 60 to 100 inches or more. Depth to the argillic horizon ranges from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid.

The A horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1; has hue of 7.5YR, value of 3, and chroma of 2; or is neutral in hue and has value of 2 or 3. Thickness of the horizon ranges from 10 to 21 inches.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. Redoximorphic features are none to common. Thickness of the horizon ranges from 7 to 24 inches.

The Btg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. It has common or many grayish, brownish, or yellowish redoximorphic features. Clay content ranges from 10 to 18 percent in the control section and from 23 to 50 percent below a depth of about 50 inches. Texture is fine sandy loam or sandy clay loam.

The Cg horizon is neutral in hue or has hue of 10YR to 5Y, has value of 5 to 7, and has chroma of 2 or less, or it has hue of 5GY, value of 5 to 7, and chroma of 1. Texture ranges from fine sand to sandy clay loam. The horizon extends to a depth of 80 inches or more.

Tisonia Series

The Tisonia series consists of nearly level, very poorly drained, organic soils. These soils formed from nonwoody, halophytic plant remains underlain by fine textured sediments. They are in tidal marshes. The soils are very slowly permeable. The high water table generally is at or near the surface, and areas are flooded twice daily by fluctuating tides for very brief periods. Slopes are linear and are 0 to 1 percent. The Tisonia soils are clayey, montmorillonitic, euic, thermic Terric Sulfihemists.

The Tisonia soils are closely associated on the landscape with Albany, Boulogne, Cornelia, Corolla, Fripp, Kershaw, Kureb, Leon, Lynn Haven, Mandarin, Mascotte, Maurepas, Ortega, Pelham, Pottsburg, Ridgewood, Rutlege, Surrency, and Wesconnett soils. Albany, Boulogne, Cornelia, Corolla, Fripp, Kershaw, Kureb, Leon, Mandarin, Mascotte, Ortega, Pelham, Pottsburg, and Ridgewood soils are better drained than the Tisonia soils. All of the associated soils, except for Maurepas soils, are mineral. Lynn Haven soils are on flats. Maurepas soils are organic and are on flood plains influenced by tides. Rutlege soils are on flood plains. Surrency and Wesconnett soils are in depressions.

Typical pedon of Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded; on a grassy flat, approximately 100 feet east of Eagle Bend Island Boulevard, 1,000 feet north of Yellow Bluff Road, SE¼SW¼SW¼, sec. 33, T. 2 S., R. 27 E.

Oe—0 to 18 inches; dark grayish brown (2.5Y 4/2) mucky peat; about 60 percent fiber unrubbed, 30 percent fiber rubbed; massive; very friable; sodium pyrophosphate extract is light gray (10YR 6/1); about 30 percent mineral material; 1.66 percent sulfur and 22.6 millimhos per centimeter conductivity in the upper 9 inches of the horizon and 2.96 percent sulfur and 27.8 millimhos per centimeter conductivity in the lower 9 inches; slightly acid in water at field moisture (air dry pH 5.2 in 0.01 molar calcium chloride); gradual smooth boundary.

Cg—18 to 65 inches; dark olive gray (5Y 3/2) clay; massive; flows easily between the fingers when squeezed; 2.73 percent sulfur and 48.2 millimhos per centimeter conductivity in the upper 6 inches of the horizon and 2.27 percent sulfur and 36.2

millimhos per centimeter conductivity in the lower part, *n* value of 2.86; neutral in water at field moisture (air dry pH 5.2 in 0.01 molar calcium chloride).

The content of sulfur ranges from 1.5 to about 3.5 percent throughout the profile. The organic material in all tiers is dominantly hemic. The thickness of the organic material is 16 to 27 inches. Reaction ranges from slightly acid to mildly alkaline in water. After air drying the soil, pH in 0.01 molar calcium chloride decreases to moderately acid or lower. Conductivity of the saturation extract ranges from 22 to 51 millimhos per centimeter.

The Oe horizon has hue of 10YR to 5Y, value of 2 to 4, and chroma of 2.

The Cg horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. The material in this horizon flows easily between the fingers when squeezed. The *n* value is more than 1. The quantity of lenses of loamy fine sand and fine sandy loam ranges from none to common at depths of more than 40 inches.

Wesconnett Series

The Wesconnett series consists of nearly level, very poorly drained, sandy soils. These soils formed in thick sandy marine sediments. They are in depressions. The soils are moderately slowly permeable to rapidly permeable. Generally, the high water table is at or above the surface for very long periods. Slopes are concave and range from 0 to 2 percent. The Wesconnett soils are sandy, siliceous, thermic Typic Alaquods.

The Wesconnett soils are closely associated on the landscape with Boulogne, Evergreen, Kureb, Leon, Lynn Haven, Pamlico, Pottsburg, Rutlege, and Tisonia soils. Boulogne and Leon soils are poorly drained and in flatwoods. Evergreen soils have a histic epipedon. Kureb soils are excessively drained and on dunes and rises. Lynn Haven soils are on flats. Pamlico soils are organic. Pottsburg soils are poorly drained and somewhat poorly drained and are in flatwoods, on rises, and on knolls. Rutlege soils do not have a spodic horizon and are on flood plains. Tisonia soils are organic and in tidal marshes.

Typical pedon of Wesconnett fine sand in an area of Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes; in a depressional area, 700 feet south of Plummer Road, 660 feet east of the Nassau County line, SE1/4NE1/4NE1/4, sec. 11, T. 1 S., R. 24 E.

A—0 to 2 inches; black (10YR 2/1) fine sand; weak fine granular structure; very friable; extremely acid; clear smooth boundary.

Bh1—2 to 10 inches; black (N 2/0) fine sand; massive; friable; common fine and medium light gray (10YR 7/1) bodies; sand grains coated with organic matter; extremely acid; diffuse smooth boundary.

Bh2—10 to 26 inches; dark reddish brown (5YR 3/2) fine sand; massive; friable; common light gray (10YR 7/1) bodies; sand grains coated with organic matter; extremely acid; gradual wavy boundary.

Bh3—26 to 32 inches; dark brown (7.5YR 3/2) fine sand; massive; friable; common light gray (10YR 7/1) bodies; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

E/Bh—32 to 44 inches; pale brown (10YR 6/3) fine sand; common medium distinct dark brown (7.5YR 3/2) bodies of Bh material; single grained; loose; strongly acid; clear wavy boundary.

B´h1—44 to 72 inches; reddish black (2.5YR 2/1) fine sand; massive; friable; sand grains coated with organic matter; strongly acid; gradual wavy boundary.

B´h2—72 to 80 inches; very dusky red (2.5YR 2/2) fine sand; massive; friable; sand grains coated with organic matter; strongly acid.

The thickness of the solum ranges from 30 to 80 inches. Reaction ranges from extremely acid to slightly acid throughout the profile.

Some pedons have an Oa horizon above the A horizon. The Oa horizon has hue of 10YR, value of 2 or 3, and chroma of 1. It is less than 8 inches thick.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Gray or light gray bodies occur in some pedons. Texture is fine sand or mucky fine sand. The horizon is 2 to 14 inches thick.

The Bh horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 3 or less or has hue of 7.5YR, value of 4, and chroma of 2. Gray or light gray bodies of clean sand grains occur in some pedons. The horizon is 10 to 45 inches thick.

The E horizon has hue of 10YR, value of 4 to 7, and chroma of 3 or 4. Some pedons have an Eg horizon that has chroma of 1 or 2. The E horizon is 0 to 32 inches thick.

The B´h horizon has the same range in color as the Bh horizon and also can have hue of 10R or 2.5YR, value of 2, and chroma of 1 or 2. It extends to a depth of 80 inches or more. Parts of this horizon are weakly cemented.

Yonges Series

The Yonges series consists of nearly level, poorly drained soils. These soils formed in sandy and loamy

sediments. They are on flats. The soils are moderately permeable and moderately slowly permeable. Generally, the high water table is at a depth of less than 12 inches. Slopes are convex and range from 0 to 2 percent. The Yonges soils are fine-loamy, mixed, thermic Typic Endoaqualfs.

The Yonges soils are closely associated on the landscape with Lynchburg, Mascotte, Pelham, Stockade, Surrency, and Yulee soils. Lynchburg soils are somewhat poorly drained and on rises and knolls. Mascotte soils have spodic horizons and are in flatwoods. Pelham soils have argillic horizons at a depth of 20 to 40 inches. Stockade and Surrency soils are very poorly drained and have argillic horizons at a depth of 20 to 40 inches. Stockade soils are in depressions. Surrency soils are in depressions and on flood plains. Yulee soils have a mollic epipedon and are on flood plains and in depressions.

Typical pedon of Yonges fine sandy loam, 0 to 2 percent slopes; in a wooded area, approximately 600 feet east of Bulls Bay Road, 600 feet south of Pritchard Road, NE1/4SE1/4, sec. 34, T. 1 S., R. 25 E.

Ap—0 to 3 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.

E—3 to 6 inches; gray (10YR 5/1) loamy fine sand; many medium faint light gray (10YR 7/1) bodies; moderate fine granular structure; very friable; mildly alkaline; clear smooth boundary.

Btg1—6 to 25 inches; gray (10YR 6/1) sandy clay loam; common large light gray (10YR 7/1) bodies of loamy fine sand; many coarse distinct yellow (10YR 7/6) and few fine faint yellowish brown (10YR 5/6) iron masses; medium subangular blocky structure; firm; sand grains bridged and coated with clay; few faint clay films on faces of peds; moderately alkaline; gradual wavy boundary.

Btg2—25 to 31 inches; gray (10YR 6/1) and dark gray (10YR 4/1) sandy clay loam; many coarse faint brownish yellow (10YR 6/8) iron masses; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; few faint clay films on faces of peds; many medium and large soft accumulations of calcium carbonate; many fine dark concretions (oxides); moderately alkaline; gradual wavy boundary.

Btg3—31 to 55 inches; gray (5Y 6/1), yellowish brown (10YR 5/6), and yellow (10YR 7/8) sandy clay loam; strong medium subangular blocky structure; firm; sand grains bridged and coated with clay; few faint clay films on faces of peds; few medium and large soft accumulations of calcium carbonate; few large dark gray (10YR 4/1) streaks of fine sandy loam along root channels; moderately alkaline; gradual wavy boundary.

Btg4—55 to 65 inches; greenish gray (5GY 6/1) sandy clay loam; many coarse prominent yellowish brown (10YR 5/8) iron masses; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; few faint clay films on faces of peds; olive (5Y 5/6) streaks of sandy loam; moderately alkaline; gradual smooth boundary.

BCg—65 to 80 inches; dark greenish gray (5GY 4/1), greenish gray (5GY 5/1), and light olive brown (2.5Y 5/4) sandy clay loam; weak medium subangular blocky structure; friable; common medium white (10YR 8/1) streaks of sandy loam; moderately alkaline.

The thickness of the solum ranges from 40 to more than 72 inches. The A and E horizons are very strongly acid to mildly alkaline. The upper part of the B horizon is strongly acid to moderately alkaline, and the lower part is slightly acid to moderately alkaline.

The Ap horizon is neutral in hue or has hue of 10YR or 2.5Y, has value of 3 or 4, and has chroma of 2 or less. It is 6 to 10 inches thick. The A horizon, if it occurs, has hue of 10YR, value of 2 or 3, and chroma of 2 or less. It is as much as 5 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It has redoximorphic features in colors with higher chroma.

The Btg horizon has hue or 10YR to 5GY or is neutral in hue, has value of 4 to 7, and has chroma of 2 or less. Most pedons have few to many redoximorphic features in colors ranging to hue of 2.5YR and chroma of 6. The particle-size control section is 18 to 35 percent clay. Texture is dominantly sandy clay loam or clay loam but ranges from fine sandy loam to sandy clay.

The BCg horizon has colors similar to those of the B horizon. Texture is fine sandy loam, sandy loam, or sandy clay loam.

Some pedons have a Cg horizon. This horizon has colors similar to those of the B horizon. Texture ranges from sandy to clayey.

Yulee Series

The Yulee series consists of nearly level, very poorly drained soils. These soils formed in thick clayey marine sediments. They are on flood plains and in depressions. The soils are very slowly permeable. In areas in depressions, the high water table generally is at or above the surface for very long periods. In areas on flood plains, the high water table generally is at or near the surface and the areas are subject to frequent

flooding for long periods. Slopes are concave and range from 0 to 2 percent. The Yulee soils are fine-loamy, mixed, thermic Typic Endoaquolls.

The Yulee soils are closely associated on the landscape with Lynchburg, Maurepas, Pelham, Stockade, Surrency, and Yonges soils. Lynchburg soils are somewhat poorly drained, do not have a mollic epipedon, and are on rises and knolls. Maurepas soils are organic and on flood plains affected by tidal action. Pelham soils are poorly drained and on flats. Stockade and Surrency soils have a loamy subsoil at a depth of 20 to 40 inches. Yonges soils are poorly drained, do not have a mollic epipedon, and are on flats.

Typical pedon of Yulee clay, 0 to 2 percent slopes, frequently flooded; in a wooded area, approximately 1.25 miles north of the junction of Acree Road (Thomas Road) and Old Kings Road, 1.65 miles north of Woodley Road, 150 feet east of U.S. Highway 1, SW1/4NW1/4NW1/4, sec. 26, T. 1 N., R. 25 E.

Oi—2 inches to 0; partially decayed leaves, moss, and twigs.

A1—0 to 7 inches; black (N 2/0) clay; moderate fine granular structure; friable; strongly acid; gradual smooth boundary.

A2—7 to 14 inches; black (N 2/0) clay; few fine distinct yellowish brown (10YR 5/6) iron masses; weak medium subangular blocky structure; sticky; clay skins on faces of peds; moderately acid; gradual smooth boundary.

Bg1—14 to 28 inches; very dark gray (10YR 3/1) sandy clay loam; few fine distinct strong brown (7.5YR 5/8) iron masses; weak coarse subangular blocky structure; slightly sticky; moderately alkaline; gradual smooth boundary.

Bg2—28 to 40 inches; dark gray (10YR 4/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) iron masses; weak coarse subangular blocky structure; slightly sticky; moderately alkaline; gradual smooth boundary.

Bg3—40 to 48 inches; dark gray (5Y 4/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) iron masses; weak coarse subangular blocky structure; slightly sticky; few fine light gray pockets of sand; moderately alkaline; gradual smooth boundary.

Bg4—48 to 66 inches; dark gray (5Y 4/1) sandy clay loam; many coarse prominent strong brown (7.5YR 5/8) and dark red (2.5YR 3/6) iron masses; weak coarse subangular blocky structure; slightly sticky; few fine light gray pockets of sand; moderately alkaline; gradual smooth boundary.

C—66 to 75 inches; pale yellow (2.5Y 7/4) sandy clay loam; few fine prominent dark reddish brown (5YR 3/4) and many fine distinct dark yellowish brown (10YR 4/4) iron masses; massive; friable; moderately alkaline; gradual wavy boundary.

Cg—75 to 80 inches; coarsely multicolored greenish gray (5BG 5/1), dark greenish gray (4BG 4/1), and olive (5Y 5/6) clay loam; massive; very friable; moderately alkaline.

Reaction ranges from strongly acid to strongly alkaline in the A horizon and from moderately acid to moderately alkaline in the B and C horizons. Base saturation exceeds 50 percent throughout the profile.

The A horizon is neutral in hue or has hue of 10YR, has value of 1 or 2, and has chroma of 2 or less. Thickness of the horizon ranges from 18 to 21 inches.

The Bg horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. It has yellow, brown, or red iron masses. Texture is sandy clay loam. Clay content ranges from 21 to 35 percent, and silt content ranges from 10 to 20 percent. This horizon is 36 to 60 inches thick.

The C horizon is neutral in hue or has hue of 5Y, 2.5Y, 5BG, or 5GY, has value of 4 to 7, and has chroma of 4 or less. It has yellow, brown, or red iron masses. It extends to a depth of more than 80 inches. The horizon is sandy clay loam or clay loam.

Formation of the Soils

In this section, the factors of soil formation are described and related to the soils in Duval County and the processes of horizon differentiation are explained. The geomorphology of the survey area is also discussed.

Factors of Soil Formation

The kind of soil that develops in an area depends on five major factors. These factors are the physical and mineral composition of the parent material; the climate under which the soil material has accumulated and has existed since accumulation; the organisms, or plant and animal life, on and in the soil; the relief, or lay of the land; and the length of time that these factors have acted on the soil material *(19, 20)*. All of these factors affect the formation of each soil, but the relative importance of each factor differs from place to place. In some areas one factor may dominate in the formation of a soil and determine most of the soil properties. For example, if the parent material consists of pure quartz sand, which is highly resistant to weathering, the soil generally has weakly expressed horizons. Even in quartz sand, however, a distinct profile can be formed under certain types of vegetation if relief is low and flat and the water table is high.

The interrelationship among the five soil-forming factors is complex, and the effects of any one factor cannot be isolated and completely evaluated. Each factor is described separately, and the probable effects of each are indicated.

Parent Material

The parent material of the soils in Duval County consists mostly of deposits of marine origin. These deposits consist mostly of quartz sand and have varying amounts of clay and shell fragments. Clay is more abundant in soils that formed in sediments on marine terraces and in lagoons. It is almost completely absent on shoreline ridges, where most deposits consist of eolian sand. The parent material was transported by ocean currents. The ocean covered the survey area several times during the Pleistocene age.

Parent materials in the county differ somewhat in mineral and chemical composition and in physical structure. The main physical differences, such as those between sand, silt, and clay, can be observed in the field. Other differences, such as mineral and chemical composition, are important to soil formation and affect the present physical and chemical characteristics of the soils. Many differences among the soils in the county reflect differences originally in the parent material.

There are some areas of organic soils throughout the county. These soils formed in partly decayed wetland vegetation.

Climate

Climate, particularly temperature and rainfall, mainly determines the rate and nature of physical, chemical, and biological processes which affect the weathering of soil material. Rainfall, changing temperature, wind, and sun accelerate the breakdown of rocks and minerals, the release of chemicals, and other processes that affect the formation of soils. The amount of water that percolates through the soil depends on rainfall, relative humidity, soil permeability, and physiographic position. Temperature influences the kinds of organisms living in an area and their growth rate and the speed of physical and chemical reactions in the soils.

Duval County has a warm, humid climate characterized by long, hot summers and short, mild winters. The soils generally have a low amount of bases because most of the rainfall percolates downward through the soil. Because rainfall generally is well distributed, most of the soils retain moisture throughout the year. Climate is uniform throughout the county and thus has affected soil formation similarly in all parts of the county. The soils in the county are mostly highly weathered, leached, and strongly acid and have low levels of natural fertility and a low content of organic matter.

Plants and Animals

Plants, animals, and other organisms significantly affect soil formation. Plant and animal life can increase the content of organic matter and nitrogen, increase or decrease the amount of plant nutrients, and alter the structure and porosity of the soils.

Plants recycle nutrients, accumulate organic matter, and provide food and cover for wildlife. They stabilize the surface layer so that soil-forming processes can take place. Vegetation also provides a more stable environment by protecting the soil from extremes in temperature.

The soils in Duval County formed under a succession of plants. Today, this succession is indicated by the smooth cordgrass and black rush on the marshlands, the big cordgrass and giant cutgrass in the areas of brackish water, the hardwood trees and cypress in the very poorly drained areas, and the pine trees in the moderately well drained to poorly drained areas.

Animals rearrange soil material by roughening the soil surface, forming and filling channels, and shaping peds and voids. The soil is mixed by the channeling of ants, wasps, worms, and spiders and the burrowing of crustacea, such as crabs, crawfish, turtles, and other reptiles. Bacteria, fungi, and other micro-organisms accelerate the decomposition of organic matter and increase the amount of minerals released for additional plant growth. Humans affect soil development by tilling, removing natural vegetation and establishing other plants, and reducing or increasing soil fertility.

The changes caused by plants and animals are important in the development of soils in Duval County. The fiddler crab and other crustacea continuously burrow and rework the upper horizons of Tisonia soils. Plant residue provides most of the organic matter for the formation of the umbric epipedon in Rutlege soils. Plants recycle the calcium in Yonges soils and provide the stability necessary for the formation of the ochric epipedon.

Relief

Relief, or lay of the land, affects soil formation by influencing microclimate and water relationships. Soil temperature is influenced by altitude and by the orientation of slopes toward or away from the sun. Relief controls drainage, runoff, erosion, soil fertility, and vegetation. Soil formation is slowed on steep slopes because soil material and organic matter tend to gravitate downslope.

Although the terrain of Duval County is mainly nearly level, relief has significantly affected the soils. The soils are dominantly sandy because the parent material of most of the soils consists of sandy marine deposits. Because sandy soils have a low available water capacity and easily become droughty, most of the water available to plants is supplied by the water table. As a result, the depth to the water table becomes extremely important in determining the type of vegetation that can grow in a particular area.

The depth to the water table also affects internal drainage. On the sand ridges, where the water table is deep and the soils are highly leached, soluble plant nutrients and colloidal clays and organic matter are rapidly transported downward through the sandy soils.

In flatwood areas the water table is commonly at a depth of 0.5 foot to 1.5 feet and rarely drops below a depth of 5 feet. Organic matter is translocated down into the soil a short distance and forms a humus-rich spodic horizon, or Bh horizon. This horizon is referred to locally as a hardpan.

In low areas or depressions, where the water table is generally at or above the surface, muck accumulates under marsh or swamp vegetation. As the plants die, the residue accumulates in the water where oxygen is excluded. The residue slowly and only partly decays. The amount of muck that accumulates depends mainly on the depth and duration of standing water. In some wet areas accumulations of organic matter have formed a thick black topsoil on the mineral soil instead of a surface layer of muck.

Time

Time is an important factor in soil formation. The physical and chemical changes produced by climate, plants and animals, and relief are slow. The length of time needed to convert raw, geologic material into soil varies according to the nature of the geologic material and the interaction of the other soil-forming factors. Some basic minerals weather fairly rapidly, while other minerals are chemically inert and change little over long periods of time. The translocation of fine particles in the development of soil horizons varies under different conditions, but the processes always take a relatively long time.

In Duval County the dominant geologic materials are inert. The sand is almost pure quartz and is highly resistant to weathering. The finer textured silt and clay are products of earlier weathering.

Relatively little geologic time has elapsed since the material in which the soils in the county formed was

deposited by the sea. The upper part of the loamy and clayey horizons developed in place through the process of clay translocation.

Processes of Horizon Differentiation

Soil morphology refers to the development of soil horizons, or soil horizon differentiation. In Duval County, the differentiation of soil horizons involves generally more than one of the following processes: accumulation of organic matter, leaching of carbonates, reduction and transfer of iron, and accumulation of silicate clay minerals.

Some organic matter has accumulated in the upper layers of most of the soils to form an A horizon. The content of organic matter is low in some soils and high in others.

Carbonates and salts have been leached from most of the soils. Because leaching permits the subsequent translocation of silicate clay material in some soils, the effects of leaching have been indirect. Most of the soils in the county are leached to varying degrees.

Chemical reduction, or gleying, has occurred in many of the soils in the county, except the excessively drained soils. Gleying is caused by wetness. The gray matrix color in the B horizon and the iron depletions in loamy soils indicate the reduction of iron. In sandy soils reddish brown iron accumulations occurring as iron masses and pore linings indicate the segregation of iron and a fluctuating water table.

The translocation of silicate clay, colloidal organic matter, and iron oxides has contributed to horizon development in many of the soils in the county. The movement of clay, organic matter, or iron is apparent in many of the soils; such as in a leached, light-colored E horizon, in a Bt or Bh horizon that has sand grains bridged and coated with clay or colloidal organic matter, in a few patchy clay films on faces of peds, and in root channels.

Geomorphology

Richard Green, geologist, Florida Geological Survey, prepared this section.

Duval County is located within the Northern or Proximal Zone. Most of the terrain is generally flat. The county has extensive swampy areas that are drained by numerous creeks and tributaries. Several geomorphic features within Duval County have been delineated.

The high areas in the western part of the county are included in the Duval Upland. Trail Ridge, a north-and-south-trending series of quartz sand hills, crosses through the southwestern corner of the county. In Duval County, elevations of Trail Ridge range from +25 feet NGVD (National Geodetic Vertical Datum of 1929) to more than +90 feet NGVD. Most of Trail Ridge, however, lies within Baker and Clay Counties.

The largest geomorphic feature in Duval County is the Eastern Valley, which covers the southeastern part of the county. This valley is approximately 18 to 20 miles in width and contains the Center Park Ridge. It is bound on the east by the Atlantic Beach Ridges *(56)*. The Eastern Valley is bordered on the west by the Duval Upland and on the north by the St. Mary's Meander Plain. Elevations in the Eastern Valley range from approximately +25 feet NGVD to less than +5 feet NGVD.

The Center Park Ridge, a topographic high composed of fine sand, is located in the southeastern part of Duval County. It is a continuation of the Atlantic Coastal Ridge System. Elevations of this ridge range from approximately +25 feet NGVD to more than +70 feet NGVD.

The St. Mary's Meander Plain makes up the northern half of the county. This plain was formed by a network of sediment-laden streams which drained the northern part of the survey area. The elevations of the St. Mary's Meander Plain range from less than +5 feet NGVD near the coast to about +30 feet NGVD in the western part of the county.

Duval County is drained by two major rivers, the St. Johns River and the Nassau River, and by several other tributaries, including the Ribault River, the Trout River, the Ortega River, the Broward River, Thomas Creek, Dunn Creek, and Julington Creek. The county also has numerous small creeks which drain into the Intracoastal Waterway or the Atlantic Ocean.

Stratigraphy

Duval County is underlain by hundreds of feet of marine sands, clays, and carbonates. The oldest lithologic unit in Duval County used for its ground-water supplies is the Oldsmar Formation of Eocene age (37 to 54 million years old) *(18)*. Undifferentiated sediments of Pliocene to Holocene age (5 million years old and younger) are the youngest sediments in Duval County. The Oldsmar Formation and younger geologic units are important water-bearing units in the county. The following paragraphs discuss only Eocene and younger sediments. Figure 23 shows locations of stratigraphic cross sections, and figures 24 and 25 show the underlying stratigraphy of Duval County *(22)*. The W-numbers refer to Florida Geological Survey well-accession numbers.

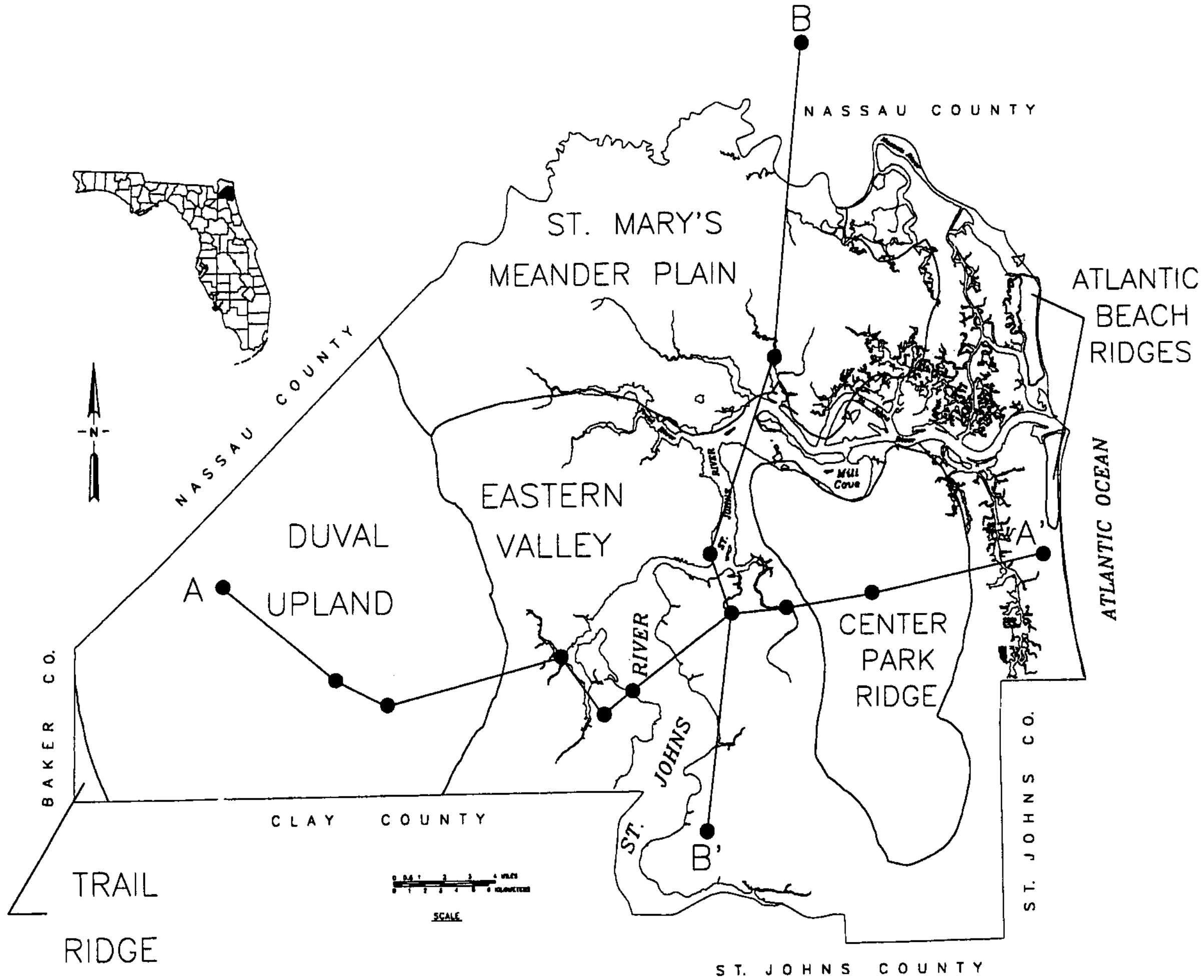


Figure 23.—Geomorphology of Duval County and location of cross sections.

Eocene Series

Oldsmar Formation. In Duval County, the Lower Eocene Oldsmar Formation is composed of cream-colored to brown, massive to chalky, granular limestone and tan, massive to finely crystalline dolomite *(18)*. This formation is the oldest and deepest formation that is used as a source of ground water in Duval County. The top of the Oldsmar Formation ranges from -1100 feet NGVD in the southwestern corner of the county to more than -1700 feet NGVD in the northeastern part. The formation makes up the lower part of the Floridan aquifer system in Duval County and ranges in thickness from approximately 400 to 500 feet *(22)*.

Avon Park Formation. In this survey, the Lake City Limestone and the Avon Park Limestone have been combined into the Avon Park Formation because the two units could not be differentiated on the basis of either lithologic or faunal differences *(3, 22)*.

The Middle Eocene Avon Park Formation overlies the Oldsmar Formation throughout Duval County *(22)*. This formation is characteristically dense, tan to light brown limestone that is interbedded with cream-colored or light to dark brown dolomite. It typically contains the foraminifers Coskinolina floridana, Dictyoconus cookei, Dictyoconus gunteri, Lituonella floridana, and Spirolina coryensis. The top of the Avon Park Formation ranges from approximately -600 feet NGVD in the southern part of the county to more than -850 feet NGVD in the northeastern part. The thickness of the formation ranges from approximately 500 feet in the southwestern part of the county to more than 800 feet in the northeastern part *(22)*.

Ocala Limestone. The Upper Eocene Ocala Limestone unconformably overlies the Avon Park

Formation throughout Duval County. The Ocala Limestone dominantly consists of very pure limestones. It includes minor amounts of dolomite near the base of the unit. These limestones are characteristically calcarenites that have various amounts of fine grained carbonate in the matrix. Typically, the Ocala Limestone varies from a packstone to a grainstone having grains comprised of biogenic debris, foraminifera, and fossil fragments. The limestone is generally white to very light gray and ranges from soft, poorly consolidated limestone to hard, recrystallized limestone. The dolomites are generally well indurated, hard, and crystalline. They range in color from gray to moderate brown. The top of the Ocala Limestone ranges from approximately -300 feet NGVD in the southeastern corner of the county to more than -500 feet NGVD in the central part. In Duval County, the limestone ranges from approximately 250 feet to more than 400 feet in thickness and is progressively thicker to the northeast *(22)*.

Miocene Series

Hawthorn Group. Sediments from the Miocene Hawthorn Group unconformably overlie the Ocala Limestone throughout Duval County *(26)*. Lithologies of sediments from the Hawthorn Group are highly variable, both vertically and laterally. In ascending order, the lithologic units forming the Hawthorn Group in Duval County are the Penney Farm's Formation, the Marks Head Formation, and the Coosawhatchie Formation. In the survey area, the Coosawhatchie Formation has one recognized member, the Charlton Member.

Penney Farms Formation. The Penney Farms Formation, predominantly a carbonate unit, unconformably overlies the Eocene Ocala Limestone in Duval County. The carbonates of this formation are variably quartz sandy, phosphatic, and clayey dolomites. Phosphate grains characteristically comprise an average of about 5 to 10 percent of the beds, and clay generally makes up less than 5 percent. Zones of phosphatized intraclasts are common in the lower portion of the formation. Sand and clay beds may occur within the formation, but pure clay beds are uncommon. Limestone may occur in a few areas in the basal part of the Penney Farms Formation *(26)*.

The top of the Penney Farms Formation ranges from approximately -150 feet NGVD in the southwestern part of the county to more than -325 feet

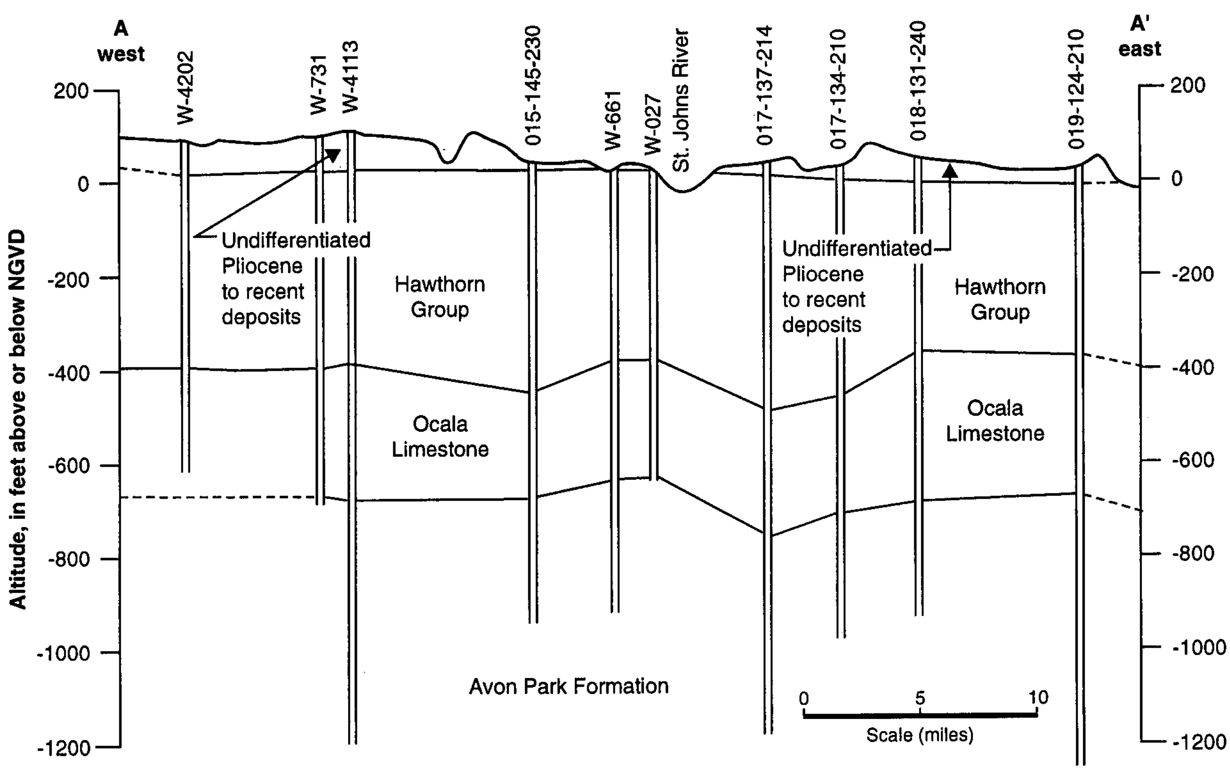


Figure 24.—West-east geologic cross section through Duval County, Florida.

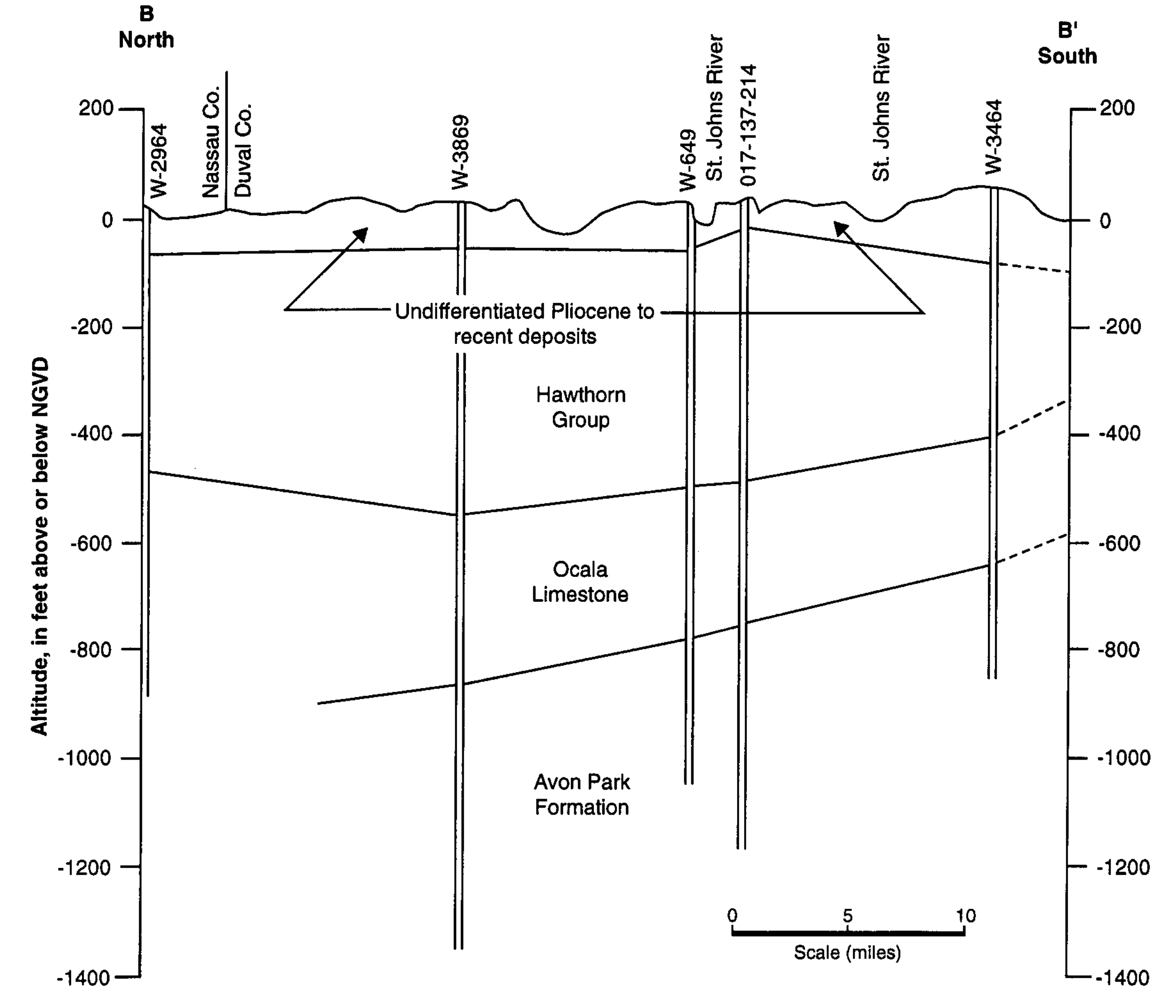


Figure 25.—North-south geologic cross section through Duval County, Florida.

NGVD in the northeastern part. In Duval County, the thickness of the formation ranges from 75 to more than 150 feet *(26)*.

Marks Head Formation. The Marks Head Formation unconformably overlies the Penney Farms Formation throughout Duval County. This formation consists of interbedded sands, clays, and dolomites. Limestone is rare but does locally occur in the Marks Head Formation. The dolomites are generally quartz sandy, phosphatic, and clayey. They vary from poorly consolidated to well indurated. Generally, induration increases as clay content decreases. The content of phosphate is characteristically less than 5 percent but may be significantly higher in some beds. The content of quartz sand, which the unit typically contains, varies from less than 5 percent to more than 50 percent. The dolomites are typically yellowish gray to olive gray. They range from microcrystalline to very finely crystalline and in some places have zones of coarser crystals. Mollusk molds are common within the unit *(26)*. Clay beds are also common and range in color from greenish gray to olive gray.

The top of the Marks Head Formation ranges from approximately -100 feet NGVD in the southwestern part of the county to more than -250 feet NGVD in the northeastern part *(30)*. The thickness of the formation is generally less than 75 feet throughout Duval County but is as much as 100 feet in the southeastern corner of the county.

Coosawhatchie Formation. The Coosawhatchie Formation unconformably overlies the Marks Head Formation in Duval County. This formation is comprised of quartz sands, clays, and dolomites. In the upper part of the formation, lithologies are characteristically clayey and sandy dolomites. The lower part of the formation dominantly consists of quartz sands and clays and includes some interbedded dolomites *(26)*.

The top of the Coosawhatchie Formation ranges from near sea level in the southwestern part of the county to more than -50 feet NGVD in the southeastern part. The thickness of the unit ranges from slightly more than 100 feet in the southwestern part of Duval County to more than 200 feet in the northeastern part *(26)*.

Charlton Member of the Coosawhatchie Formation. The Charlton Member of the Coosawhatchie Formation generally consists of interbedded clays and carbonates and typically has a low content of quartz sand and phosphate. Carbonates in this member are generally dolomites but also include limestone. In the survey area, the Charlton Member interfingers laterally and vertically with the upper part of the Coosawhatchie Formation *(26)*.

The top of the Charlton Member ranges from approximately +25 feet NGVD in the southwestern part of Duval County to more than -35 feet NGVD in the northeastern part. The Charlton Member is thickest in the northeastern part of the county. The thickness of the member ranges from approximately 20 feet in the southwestern part of the county to slightly more than 40 feet in the northern part *(26)*.

Pliocene to Holocene Undifferentiated Sediments

Fine to medium grained quartz sands of Pliocene to Holocene age cover the survey area. These sediments contain varying amounts of heavy minerals, clay, silt, organics, and iron staining. Near the coast, there are minor amounts of shell material. The sediments average approximately 20 feet thick in thickness in the central and eastern parts of Duval County.

Ground Water

Ground water in Duval County is obtained primarily from the surficial aquifer system and the Floridan aquifer system. Some minor water-producing zones may exist locally within the intermediate aquifer system or confining unit. The zones occur where permeable lithologic units are thick enough that significant quantities of water can be obtained for public use.

Surficial aquifer system. The surficial aquifer system is the uppermost aquifer system in the survey area. Ground water from this aquifer system generally has two sources—surficial sand beds and a zone of limestone, sand, and shells near the base of the undifferentiated Pliocene and younger sediments and the uppermost Miocene sediments.

The top of the limestone unit in the surficial aquifer system ranges from approximately +25 feet NGVD in the western part of the county to about -75 feet NGVD in the eastern part *(30)*. The limestone unit ranges from about 5 to 40 feet in thickness. It becomes thin and discontinuous along the coast and in the southern part of the county *(31, 33)*. In Duval County, most of the ground water from the surficial aquifer system is provided by this limestone unit *(30)*.

The surficial aquifer system in Duval County is unconfined, and its upper surface is the water table. Generally, the elevation of the water table fluctuates seasonally and parallels the topography of the land surface. Wells in the surficial aquifer system are nonflowing throughout most of the county. Some shallow wells in the vicinity of the St. Johns River exhibit artesian conditions, which probably are due to local confining beds within the surficial aquifer system *(32)*.

The surficial aquifer system in the county is primarily recharged through direct infiltration of precipitation, but there is minor recharge through upward leakage from the deeper aquifer systems. In places, the surficial aquifer system in Duval County is as much as 150 feet below the land surface.

Intermediate aquifer system/confining unit. The relatively impermeable sediments of the Hawthorn Group form the intermediate aquifer system or confining unit in Duval County. The clay-rich layers within the Hawthorn Group serve as confining units, whereas more permeable sand and limestone units may serve as local sources of ground water. The uppermost, slowly permeable beds of the Hawthorn Group are the base of the surficial aquifer system.

Floridan aquifer system. The Floridan aquifer system is comprised of several hundred feet of Eocene limestones, including the Ocala Limestone, the Avon Park Formation, and the Oldsmar Formation *(23)*. In addition, permeable beds near the base of the Hawthorn Group may form part of the Floridan aquifer system where they are hydraulically connected with the underlying Eocene carbonates.

The Floridan aquifer system is the dominant source of ground water for irrigation, public supplies, and industrial uses in Duval County. The slowly permeable sediments of the Hawthorn Group confine the Floridan aquifer system and thus cause artesian conditions throughout the county. In Duval County, depths to the top of the aquifer system range from approximately -300 to -500 feet NGVD *(22)*.

Recharge to the Floridan aquifer system occurs in areas west and southwest of Jacksonville *(13, 24)*. The primary recharge areas for the system in Duval County occur in southwestern Clay County, extreme

eastern Bradford County, and northwestern Putnam County where confining beds are thin or do not occur. Minor recharge to the Floridan aquifer system may occur where the use of ground water from the Floridan aquifer system has lowered the hydraulic head of the aquifer below that of the overlying units *(14)*.

Mineral Resources

Currently, mineral resources are not being commercially mined in Duval County. The potential for commercially viable mineral resources in the county generally is low. Heavy mineral resources, such as ilmenite and rutile, were mined from the Center Park Ridge, just east of the Arlington area, from 1944 to 1964 *(8, 16)*. There is, however, no present-day commercial mining of heavy minerals.

The topographic maps of Duval County show numerous small sand pits. These sand pits, however, are only for local use because the sand in the survey area is too fine grained for commercial use in construction.

Expanded perlite and exfoliated vermiculite are produced in the county but the raw materials needed for their manufacture are imported by the companies that make the final product *(9)*.

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vols.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Applin, P.L., and E.R. Applin. 1944. Regional subsurface stratigraphy and structure of Florida and southern Georgia. Am. Assoc. Petroleum Geologists Bull., vol. 28, no. 12, pp. 1673-1753.

(4) Barbour-Cooper Associates, Inc. 1968. Plan—1990. Jacksonville Area Planning Bd.

(5) Barns, Robert L. 1955. Growth and yield of slash pine plantations in Florida. Univ. Fla. Res. Rep. No. 3.

(6) Bouyoucos, G.J. 1962. Hydrometer method improved for making particle-size analyses of soils. Agron. J. 54: 464-465.

(7) Broadfoot, Walter M. 1964. Soil suitability for hardwoods in the Midsouth. U.S. Dep. Agric., Forest Serv., South. Forest Exp. Stn. Res. Note SO-10.

(8) Calver, J.L. 1957. Mining and mineral resources. Fla. Geol. Surv. Bull. 39.

(9) Campbell, K.M. 1986. The industrial minerals of Florida. Fla. Geol. Surv., Info. Circ. No. 102.

(10) Commission of the Northeast Florida Sesquicentennial Celebration Commission. 1995. Sesquicentennial Breakfast Brochure at Jacksonville, Florida.

(11) Cowardin, L.M., V. Carter, F.C. Golrt, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildl. Serv. FWS/OBS-79/31.

(12) Doolittle, James A. 1982. Characterizing soil map units with the ground-penetrating radar. Soil Surv. Horiz., vol. 23, no. 4, pp. 3-10.

(13) Doolittle, James A. 1983. Investigating Histosols with the ground-penetrating radar. Soil Surv. Horiz., vol. 24, no. 3, pp. 23-28.

(14) Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. U.S. Army Engin. Waterways Exp. Stn., Vicksburg, MS, Tech. Rep. Y-87-1.

(15) Fairchild, R.W. 1977. Availability of water in the Floridian aquifer in southern Duval and northern Clay and St. Johns Counties, Florida. U.S. Geol. Surv. Water Resour. Invest. Rep. 76-98.

(16) Fernald, Edward A., ed. 1981. Atlas of Florida. Fla. State Univ. Found., Inc., Tallahassee, Fla., pp. 114-151.

(17) Florida Department of State Staff. A short history of Florida. (Undated)

(18) Garnar, T.E., Jr. 1972. Economic geology of Florida heavy mineral deposits. *In* Proceedings of the seventh forum on geology of industrial minerals. H.S. Puri (ed.), Fla. Geol. Surv. Spec. Publ. No. 17.

(19) Jenny, Hans. 1941. Factors of soil formation.

(20) Jenny, Hans. 1980. The soil resource—Origin and behavior. Ecol. Stud., vol. 37.

(21) Johnson, R.W., R. Glaccum, and R. Wojtasinski. 1980. Application of ground-penetrating radar to soil survey. Soil and Crop Sci. Soc. of Fla. Proc. 39: 68-72. (Reprinted in Soil Surv. Horiz., vol. 23, no. 3, pp. 17-25)

(22) Leve, G.W. 1966. Ground water in Duval and Nassau Counties, Florida. Fla. Geol. Surv., Rep. of Invest. No. 43.

(23) Miller, J.A. 1986. Hydrogeologic framework of the Floridian aquifer system in Florida and in parts of Georgia, Alabama, and South Carolina. U.S. Dep. Inter., Geol. Surv. Prof. Pap. 1403-B, pp. 25-27.

(24) Phelps, G.G. 1985. Recharge and discharge areas of the Floridan aquifer in the St. Johns River Water Management District and vicinity, Florida. U.S. Geol. Surv. Water Resour. Invest. Rep. 82-4058.

(25) Schumacher, F.X., and T.S. Coile. 1960. Growth and yield of natural stands of the southern pines.

(26) Scott, T.M. 1985. The lithostratigraphy of the Hawthorn Group (Miocene) of Florida. Fla. Geol. Surv. Bull. 59.

(27) Shih, S.F., and J.A. Doolittle. 1984. Using radar to investigate organic soil thickness in the Florida Everglades. Soil Sci. Soc. Am. Proc. 48: 651-656.

(28) Simons, George W., Jr. 1972. Jacksonville on the St. Johns, 1822-1972. Jacksonville-Duval Area Planning Bd. and Publ. Rel. Div. of the City of Jacksonville, Fla.

(29) Snodgrass, D. 1969. Preservation of historic and cultural resources. Jacksonville Area Planning Bd.

(30) Southern Geological Society Ad Hoc Committee on Florida Hydrostratigraphic Unit Definition. 1986. Hydrogeological units of Florida. Fla. Bur. Geol. Spec. Publ. 28.

(31) Spechler, R.M. 1982. Generalized configuration of the top of the limestone unit of the lower part of the surficial aquifer, Duval County, Florida. U.S. Geol. Surv. Water Resour. Invest. Open-File Rep. 82-336.

(32) Spechler, R.M., and R.B. Stone. 1983. Appraisal of the interconnection between the St. Johns River and the surficial aquifer, east-central Duval County, Florida. U.S. Geol. Surv. Water Resour. Invest. Rep. 82-4109.

(33) Stone, R.B., and J.B. Largen. 1983. Drainage basins in Duval County, Florida. U.S. Geol. Surv. Water Resour. Invest. Rep. 82-4069.

(34) Tiner, R.W., Jr. 1985. Wetlands of Delaware. Coop. Publ., U.S. Fish and Wildl. Serv., Newton Corner, MA, and Delaware Dep. Nat. Resour. and Environ. Control, Wetland Sec., Dover, DE.

(35) United States Department of Agriculture, Bureau of Soils. 1911. Soil survey of the Jacksonville area, Florida.

(36) United States Department of Agriculture, Bureau of Soils. 1923. Soil survey of the Jacksonville area, Florida.

(37) United States Department of Agriculture, Forest Service. 1976. Volume, yield, and stand tables for second-growth southern pines. For. Serv. Misc. Publ. 50.

(38) United States Department of Agriculture, Forest Service. 1987. Forest Statistics for Northeast Florida. For. Serv. Resour. Bull. SE-97.

(39) United States Department of Agriculture, Natural Resources Conservation Service. 1996. Field indicators of hydric soils in the United States. G.W. Hurt, P.M. Whited, and R.F. Pringle, eds.

(40) United States Department of Agriculture, Natural Resources Conservation Service. 1996. National soil survey handbook. Soil Surv. Staff, title 430-VI. (Available in the State Office of the Natural Resources Conservation Service at Gainesville, Florida)

(41) United States Department of Agriculture, Soil Conservation Service. Food Security Act Manual. (Available in the State Office of the Natural Resources Conservation Service at Gainesville, Florida)

(42) United States Department of Agriculture, Soil Conservation Service. Hydric soils of the United States. (Available in the State Office of the Natural Resources Conservation Service at Gainesville, Florida)

(43) United States Department of Agriculture, Soil Conservation Service. National forestry manual. (Available in the State Office of the Natural Resources Conservation Service at Gainesville, Florida)

(44) United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210.

(45) United States Department of Agriculture, Soil Conservation Service. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. U.S. Dep. Agric. Handb. 436.

(46) United States Department of Agriculture, Soil Conservation Service. 1978. Soil survey of City of Jacksonville, Duval County, Florida.

(47) United States Department of Agriculture, Soil Conservation Service. 1984. Procedures for collecting soil samples and methods of analysis for soil survey. Soil Surv. Invest. Rep. 1.

(48) United States Department of Agriculture, Soil Conservation Service. 1985. 26 ecological communities of Florida.

(49) United States Department of Agriculture, Soil Conservation Service. 1985. Site index and yield of second-growth baldcypress. Soil Conserv. Serv. Tech. Note 5.

(50) United States Department of Agriculture, Soil Conservation Service. 1991. Soil survey of Nassau County, Florida.

(51) United States Department of Agriculture, Soil Conservation Service. 1993. Soil survey manual. Soil Surv. Staff, U.S. Dep. Agric. Handb. 18.

(52) United States Department of Agriculture, Soil Conservation Service. 1994. Keys to soil taxonomy. 6th ed. Soil Surv. Staff, Soil Manage. Support Serv. Tech. Monogr. 19.

(53) United States Department of Commerce, National Oceanic and Atmospheric Administration. 1990. Local climatological data with annual summary with comparative data for Jacksonville, Florida.

(54) United States Department of the Interior, National Park Service. 1990. Fort Caroline fact sheet.

(55) University of Florida. 1994. Florida statistical abstract. Bur. of Econ. and Bus. Res., Coll. of Bus. Admin., pp. 324-326.

(56) White, William A. 1970. The geomorphology of the Florida peninsula. Fla. Dep. Nat. Resour., Bur. Geol. Bull. 51.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 0.5
Low	0.5 to 0.10
Moderate	0.10 to 0.15
High	0.15 to 0.20
Very high	more than 0.20

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil,

expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depression. A landform that is 6 inches to more than 2 feet lower in elevation than the surrounding area and is ponded for long periods of time.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Dune. A low mound, ridge, bank, or hill that consists of loose windblown, granular material (generally sand), is bare or covered with vegetation, and may move from place to place but always retains its characteristic shape.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flats. A nearly level landform consisting mostly of broad, slightly depressional or poorly defined or slightly depressional and poorly defined drainageways that do not have significant variations in curvature, slope, or elevation and are not marshes or depressions. Most low flats consist of poorly drained and very poorly drained soils.

Flatwoods. A broad, nearly level landform consisting of poorly drained soils that commonly have spodic horizons (organic stained hardpans) and have characteristic vegetation of open pine forest and an understory of saw palmetto and gallberry.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors which differentiate it from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A very small channel with steep sides cut by running water and through which water ordinarily runs only after rainfall, icemelt, or snowmelt. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage. Areas identified on the detailed soil maps by a special symbol typically are less than 2 acres in size.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn that are used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the

kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones that have a low content of iron and manganese oxide because of chemical reduction and removal but also have a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation include:

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Landform. Any recognizable physical feature on the earth's surface that has a characteristic shape and is produced by natural causes.

Landscape. A collection of related, natural landforms; generally, the land surface that can be seen in a single view.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Low-residue crops. Such crops as corn that are used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Perennial stream. A stream, or reach of a stream, that usually flows continually throughout the year. It receives water from springs and seeps. It may be dry for a short period, generally less than 3 months.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay and quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is also exposed to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate weather conditions and soil moisture conditions and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. They indicate chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. They indicate the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation. Descriptive terms for concentrations and depletions are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rises. A landform that has a broad summit and gently sloping sides in areas adjacent to lower, wetter land.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral

fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Site quality. Designation of the quality of a forest site based on the height of the dominant or codominant trees within fully stocked, even-aged, managed pine plantations of a given species at an age of 25 years. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 25 is 60 feet, the site quality is 60 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 2 percent
Gently sloping	2 to 5 percent
Sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 45 percent
Very steep	45 percent and higher

Classes for complex slopes are as follows:

Nearly level	0 to 2 percent
Gently undulating	2 to 5 percent
Gently rolling	5 to 8 percent
Rolling	8 to 12 percent
Hilly	12 to 20 percent
Steep	20 to 45 percent
Very steep	45 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E,

and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and to divert water off and away from the road surface. Water bars can be easily driven over if they are constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1961-90 at Jacksonville, Florida)

Month	Temperature						Precipitation			
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
January-----	64.1	41.6	52.8	82	18	410	3.31	1.45	4.90	5
February----	66.9	43.9	55.4	84	24	436	3.93	2.02	5.60	5
March-------	73.9	50.3	62.1	88	30	685	3.68	1.57	5.47	5
April-------	80.0	55.8	67.9	92	38	838	2.77	1.00	4.24	4
May---------	85.3	63.1	74.2	96	48	1,060	3.55	1.25	5.45	5
June--------	89.4	69.7	79.6	99	57	1,187	5.69	3.32	7.80	8
July--------	91.7	72.6	82.1	100	65	1,307	5.60	3.81	7.24	9
August------	90.7	72.4	81.6	98	66	1,288	7.93	4.92	10.64	10
September---	87.2	69.7	78.4	96	56	1,153	7.05	2.99	10.50	8
October-----	80.2	59.9	70.1	92	40	932	2.90	.95	4.49	4
November----	73.3	50.7	62.0	85	29	661	2.19	.85	3.45	3
December----	66.9	44.1	55.5	83	21	486	2.72	.97	4.18	4
Yearly:										
Average---	79.1	57.8	68.5	---	---	---	---	---	---	---
Extreme---	103	7	---	100	17	---	---	---	---	---
Total-----	---	---	---	---	---	10,443	51.31	43.12	59.16	70

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Jacksonville, Florida)

Probability	Temperature: 24 °F or lower	Temperature: 28 °F or lower	Temperature: 32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Feb. 17	Feb. 27	Mar. 21
2 years in 10 later than--	Feb. 8	Feb. 18	Mar. 13
5 years in 10 later than--	Jan. 19	Feb. 1	Feb. 26
First freezing temperature in fall:			
1 year in 10 earlier than--	Dec. 12	Nov. 26	Nov. 10
2 years in 10 earlier than--	Dec. 26	Dec. 5	Nov. 16
5 years in 10 earlier than--	Jan. 27	Dec. 23	Nov. 29

Table 3.—Growing Season

(Recorded in the period 1961-90 at Jacksonville, Florida)

Probability	Daily minimum temperature during growing season: Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	296	282	244
8 years in 10	305	292	255
5 years in 10	323	310	276
2 years in 10	341	327	297
1 year in 10	350	337	308

Table 4.—Available Construction Days

(Recorded in the period 1961-1990 at Jacksonville, Florida)

Month	Calendar days/month	Total days available	Accumulated total days	Accumulated work days*
January	31	19	19	13
February	28	19	38	27
March	31	25	63	45
April	30	25	88	62
May	31	25	113	80
June	30	21	134	95
July	31	22	156	111
August	31	21	177	126
September	30	21	198	141
October	31	26	224	160
November	30	25	249	177
December	31	22	271	193

* Five-sevenths of the accumulated total days.

Table 5.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
2	Albany fine sand, 0 to 5 percent slopes	4,376	0.9
6	Aquic Quartzipsamments, 0 to 2 percent slopes	2,192	0.4
7	Arents, nearly level	10,147	2.0
9	Arents, sanitary landfill	734	0.1
10	Beaches, very frequently flooded	1,191	0.2
12	Blanton fine sand, 0 to 6 percent slopes	850	0.2
14	Boulogne fine sand, 0 to 2 percent slopes	33,425	6.7
18	Corolla fine sand, gently undulating to rolling, rarely flooded	213	*
19	Cornelia fine sand, 0 to 5 percent slopes	750	0.2
22	Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes	30,095	6.1
23	Fripp-Corolla, rarely flooded, complex, gently undulating to hilly	937	0.2
24	Hurricane and Ridgewood soils, 0 to 5 percent slopes	13,470	2.7
25	Kershaw fine sand, 2 to 8 percent slopes	2,138	0.4
26	Kershaw fine sand, smoothed, 0 to 2 percent slopes	321	*
29	Kureb fine sand, 2 to 8 percent slopes	882	0.2
31	Kureb fine sand, rolling, 8 to 20 percent slopes	437	0.1
32	Leon fine sand, 0 to 2 percent slopes	71,491	14.4
33	Leon fine sand, 0 to 2 percent slopes, very frequently flooded	539	0.1
35	Lynn Haven fine sand, 0 to 2 percent slopes	16,848	3.4
36	Mandarin fine sand, 0 to 2 percent slopes	1,973	0.4
38	Mascotte fine sand, 0 to 2 percent slopes	18,923	3.8
40	Maurepas muck, 0 to 1 percent slopes, frequently flooded	4,292	0.9
42	Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes	240	*
44	Mascotte-Pelham complex, 0 to 2 percent slopes	9,106	1.8
46	Ortega fine sand, 0 to 5 percent slopes	6,018	1.2
49	Pamlico muck, depressional, 0 to 1 percent slopes	3,984	0.8
50	Pamlico muck, 0 to 2 percent slopes, frequently flooded	565	0.1
51	Pelham fine sand, 0 to 2 percent slopes	41,394	8.3
53	Penney fine sand, 0 to 5 percent slopes	2,093	0.4
55	Pits	767	0.1
56	Pottsburg fine sand, 0 to 2 percent slopes	2,434	0.5
58	Pottsburg fine sand, high, 0 to 3 percent slopes	7,917	1.6
62	Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded	4,541	0.9
63	Sapelo fine sand, 0 to 2 percent slopes	20,827	4.2
66	Surrency loamy fine sand, depressional, 0 to 2 percent slopes	25,167	5.1
67	Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded	4,647	0.9
68	Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded	34,496	6.9
69	Urban land	26,486	5.3
71	Urban land-Leon-Boulogne complex, 0 to 2 percent slopes	21,531	4.3
72	Urban land-Ortega-Kershaw complex, 0 to 8 percent slopes	10,829	2.2
73	Urban land-Mascotte-Sapelo complex, 0 to 2 percent slopes	9,624	1.9
74	Pelham-Urban land complex, 0 to 2 percent slopes	6,468	1.3
75	Urban land-Hurricane-Albany complex, 0 to 5 percent slopes	9,315	1.9
78	Yonges fine sandy loam, 0 to 2 percent slopes	3,045	0.6
79	Yulee clay, 0 to 2 percent slopes, frequently flooded	2,208	0.4
80	Goldhead, wet, and Lynn Haven soils, 2 to 5 percent slopes	808	0.2
81	Stockade fine sandy loam, depressional, 0 to 2 percent slopes	5,758	1.2
82	Pelham fine sand, depressional, 0 to 2 percent slopes	6,950	1.4
86	Yulee clay, depressional, 0 to 2 percent slopes	6,540	1.3
87	Dorovan muck, depressional, 0 to 2 percent slopes	1,090	0.2
88	Lynchburg fine sand, 0 to 2 percent slopes	284	*
	Water (less than 40 acres in size)	5,592	1.2
	Water (more than 40 acres in size)	47,552	
	Total	544,500	100.0

* Less than 0.1 percent

Table 6.—Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Grain sorghum	Bahiagrass	Improved bermudagrass
		Bu	Bu	AUM*	AUM*
2-----Albany	IIIe	75	30	6.5	7.0
6-----Aquic Quartzipsamments	VIs	---	---	---	---
7-----Arents	VIs	---	---	---	---
9-----Arents	VIIs	---	---	---	---
10**-----Beaches	VIIIw	---	---	---	---
12-----Blanton	IIIs	60	25	6.5	8.0
14-----Boulogne	IIIw	60	55	8.5	9.0
18-----Corolla	VIIs	---	---	---	---
19-----Cornelia	VIs	---	---	3.5	---
22-----Evergreen-Wesconnett	VIIw	---	---	---	---
23-----Fripp-Corolla	VIIs	---	---	---	---
24-----Hurricane and Ridgewood	IIIw	65	35	7.0	7.0
25, 26-----Kershaw	VIIs	---	---	3.5	3.5
29-----Kureb	VIIs	---	---	---	---
31-----Kureb	VIIs	---	---	---	---
32-----Leon	IVw	50	35	7.5	9.0
33-----Leon	VIIIw	---	---	---	---
35-----Lynn Haven	IVw	---	---	---	---
36-----Mandarin	VIs	40	30	6.0	3.5

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Grain sorghum	Bahiagrass	Improved bermudagrass
		Bu	Bu	AUM*	AUM*
38: Mascotte	IIIw	50	35	8.0	6.5
40: Maurepas	VIIIw	---	---	---	---
42: Newhan-Corolla	VIIIs	---	---	---	---
44: Mascotte-Pelham	IIIw	58	35	7.4	6.5
46: Ortega	IIIs	55	25	6.0	4.5
49, 50: Pamlico	VIIw	---	---	---	---
51: Pelham	IIIw	75	30	6.0	6.5
53: Penney	IVs	35	---	4.0	4.5
55**: Pits	VIIIs	---	---	---	---
56, 58: Pottsburg	IVw	70	35	7.0	7.5
62: Rutlege	Vw	---	---	---	---
63: Sapelo	IIIw	50	35	7.5	6.5
66, 67: Surrency	VIw	---	---	---	---
68: Tisonia	VIIIw	---	---	---	---
69**: Urban land	VIIIs	---	---	---	---
71**. Urban land-Leon-Boulogne					
72**. Urban land-Ortega-Kershaw					
73**. Urban land-Mascotte-Sapelo					
74**. Pelham-Urban land					

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Grain sorghum	Bahiagrass	Improved bermudagrass
		Bu	Bu	AUM*	AUM*
75**. Urban land-Hurricane-Albany					
78------------------------ Yonges	IIIw	---	---	---	---
79------------------------ Yulee	VIIw	---	---	11.0	12.0
80------------------------ Goldhead and Lynn Haven	IIIw	---	---	---	---
81------------------------ Stockade	VIw	---	---	11.0	12.0
82------------------------ Pelham	Vw	---	---	---	---
86------------------------ Yulee	VIIw	---	---	---	---
87------------------------ Dorovan	VIIw	---	---	---	---
88------------------------ Lynchburg	IIw	115	45	10.0	6.5

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 7.—Comprehensive Hydric Soils List

(All map units are displayed regardless of hydric status and are listed in alphanumeric order by map unit symbol. The columns under "Hydric soils criteria" indicate the conditions that classified the map unit component as "hydric" or "nonhydric." These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June 1991, as revised in the Federal Register, Vol. 60, No. 37, February 24, 1995). Spot symbols are footnoted at the end of the table)

Map unit name and and map symbol	Components (C) and inclusions (I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
2: Albany fine sand, 0 to 5 percent slopes								
	Albany (C)	86	No					
	Blanton (I)	4	No					
	Hurricane (I)	2	No					
	Mascotte (I)	2	No					
	Pelham (I)	3	Yes	Slough	2B1	Yes	No	No
	Sapelo (I)	3	No					
6: Aquic Quartzipsamments, 0 to 2 percent slopes								
	Aquic Quartzipsamments (C)	100	No					
7: Arents, nearly level---								
	Arents (C)	100	No					
9: Arents, sanitary landfill-------------								
	Arents (C)	100	No					
10: Beaches, very frequently flooded----								
	Beaches (C)	98	Yes	Beach	2B1,4	Yes	Yes	No
	Corolla (I)	2	No					
12: Blanton fine sand, 0 to 6 percent slopes								
	Blanton (C)	90	No					
	Albany (I)	3	No					
	Ortega (I)	2	No					
	Pelham (I)	1	No					
	Penney (I)	1	No					
	Sapelo (I)	1	No					
	Surrency (I)	25	No	Depression	2B3,3	Yes	No	Yes
14: Boulogne fine sand, 0 to 2 percent slopes								
	Boulogne (C)	95	No					
	Leon (I)	2	No					
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Pottsburg (I)	1	No					
	Wesconnett (I)	1	Yes	Depression	2B3,3	Yes	No	Yes

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components(C) and inclusions(I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
18: Corolla fine sand, gently undulating to rolling, rarely flooded								
	Corolla (C)	95	No					
	Beaches (I)	2	Yes	Beach	2B1,4	Yes	Yes	No
	Fripp (I)	2	No					
	Newham (I)	3	No					
19: Cornelia fine sand, 0 to 5 percent slopes								
	Cornelia (C)	88	No					
	Leon (I)	3	No					
	Mandarin (I)	6	No					
	Ortega (I)	3	No					
22: Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes								
	Evergreen (C)	64	Yes	Depression	2B2,3	Yes	No	Yes
	Wesconnett (C)	31	Yes	Depression	2B3,3	Yes	No	Yes
	Leon (I)	1	No					
	Lynn Haven (I)	2	Yes	Slough	2B1	Yes	No	No
	Pamlico (I)	1	Yes	Depression	1,3	Yes	No	Yes
	Pottsburg (I)	1	Yes	Slough	2B1	Yes	No	No
23: Fripp-Corolla, rarely flooded, complex, gently undulating to hilly								
	Fripp (C)	70	No					
	Corolla (C)	25	No					
	Mandarin (I)	3	No					
	Newhan (I)	2	No					
24: Hurricane and Ridgewood soils, 0 to 5 percent slopes								
	Hurricane (C)	53	No					
	Ridgewood (C)	35	No					
	Boulogne (I)	2	No					
	Leon (I)	1	No					
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Mandarin (I)	1	No					
	Pottsburg (I)	4	No					
	Ortega (I)	3	No					
25: Kershaw fine sand, 2 to 8 percent slopes								
	Kershaw (C)	94	No					
	Blanton (I)	1	No					
	Kureb (I)	1	No					
	Ortega (I)	3	No					
	Penney (I)	1	No					

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components (C) and inclusions (I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
26: Kershaw fine sand, smoothed, 0 to 2 percent slopes								
	Kershaw (C)	96	No					
	Ortega (I)	3	No					
	Penney (I)	1	No					
29: Kureb fine sand, 2 to 8 percent slopes								
	Kureb (C)	93	No					
	Cornelia (I)	2	No					
	Kershaw (I)	3	No					
	Mandarin (I)	1	No					
	Ortega (I)	1	No					
31: Kureb fine sand, rolling, 8 to 20 percent slopes								
	Kureb (C)	93	No					
	Kershaw (I)	3	No					
	Mandarin (I)	1	No					
	Ortega (I)	2	No					
	Ridgewood (I)	1	No					
32: Leon fine sand, 0 to 2 percent slopes								
	Leon (C)	92	No					
	Boulogne (I)	1	No					
	Evergreen (I)	2	Yes	Depression	2B2,3	Yes	No	Yes
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Pottsburg (I)	2	No					
	Wesconnett (I)	2	Yes	Depression	2B3,3	Yes	No	Yes
33: Leon fine sand, 0 to 2 percent slopes, very frequently flooded								
	Leon (C)	98	Yes	Salt marsh	2B1,4	Yes	Yes	No
	Tisonia (I)	2	Yes	Salt marsh	1,4	Yes	Yes	No
35: Lynn Haven fine sand, 0 to 2 percent slopes								
	Lynn Haven (C)	89	Yes	Slough	2B1	Yes	No	No
	Boulogne (I)	1	No					
	Evergreen (I)	2	Yes	Depression	2B2,3	Yes	No	Yes
	Leon (I)	4	No					
	Pottsburg (I)	2	Yes	Slough	2B1	Yes	No	No
	Wesconnett (I)	2	Yes	Depression	2B3,3	Yes	No	Yes

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components(C) and inclusions(I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
36: Mandarin fine sand, 0 to 2 percent slopes								
	Mandarin (C)	84	No					
	Cornelia (I)	4	No					
	Hurricane (I)	3	No					
	Leon (I)	6	No					
	Ridgewood (I)	3	No					
38: Mascotte fine sand, 0 to 2 percent slopes								
	Mascotte (C)	91	No					
	Albany (I)	1	No					
	Pelham (I)	1	No					
	Pelham (I)	2	Yes	Slough	2B1	Yes	No	No
	Sapelo (I)	3	No					
	Surrency (I)	1	Yes	Depression	2B3,3	Yes	No	Yes
	Yonges (I)	1	Yes	Slough	2B3	Yes	No	No
40: Maurepas muck, 0 to 1 percent slopes, frequently flooded----								
	Maurepas (C)	86	Yes	Flood plain	1,3,4	Yes	Yes	Yes
	Dorovan (I)	3	Yes	Flood plain	1,4	Yes	Yes	No
	Evergreen (I)	1	Yes	Slough	2B2,4	Yes	Yes	No
	Pamlico (I)	2	Yes	Flood plain	1,4	Yes	Yes	No
	Rutlege (I)	2	Yes	Flood plain	2B2,4	Yes	Yes	No
	Tisonia (I)	6	Yes	Flood plain	1,4	Yes	Yes	No
42: Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes----------------								
	Newhan (C)	76	No					
	Corolla (C)	21	No					
	Beaches (I)	1	Yes	Beach	2B1,4	Yes	Yes	No
	Fripp (I)	2	No					
44: Mascotte-Pelham complex, 0 to 2 percent slopes--------								
	Mascotte (C)	66	No					
	Pelham (C)	30	No					
	Pelham (I)	1	Yes	Slough	2B1	Yes	No	No
	Surrency (I)	3	Yes	Depression	2B3,3	Yes	No	Yes
46: Ortega fine sand, 0 to 5 percent slopes								
	Ortega (C)	93	No					
	Albany (I)	1	No					
	Hurricane (I)	2	No					
	Kershaw (I)	2	No					
	Ridgewood (I)	2	No					

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components (C) and inclusions (I)*		Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
49: Pamlico muck, depressional, 0 to 1 percent slopes	Pamlico	(C)	87	Yes	Depression	1,3	Yes	No	Yes
	Dorovan	(I)	6	Yes	Depression	1,3	Yes	No	Yes
	Evergreen	(I)	2	Yes	Depression	2B2,3	Yes	No	Yes
	Lynn Haven	(I)	2	Yes	Slough	2B1	Yes	No	No
	Pelham	(I)	1	Yes	Slough	2B1	Yes	No	No
	Surrency	(I)	2	Yes	Depression	2B3,3	Yes	No	Yes
50: Pamlico muck, 0 to 2 percent slopes, frequently flooded	Pamlico	(C)	87	Yes	Flood plain	1,3,4	Yes	Yes	Yes
	Dorovan	(I)	4	Yes	Flood plain	1,4	Yes	Yes	No
	Evergreen	(I)	3	Yes	Flood plain	2B2,4	Yes	Yes	No
	Lynn Haven	(I)	2	Yes	Slough	2B1	Yes	No	No
	Maurepas	(I)	2	Yes	Flood plain	1,4	Yes	Yes	No
	Pelham	(I)	1	Yes	Slough	2B1	Yes	No	No
	Surrency	(I)	1	Yes	Flood plain	2B3,4	Yes	Yes	No
51: Pelham fine sand, 0 to 2 percent slopes	Pelham	(C)	56	No					
	Albany	(I)	1	No					
	Mascotte	(I)	2	No					
	Pelham	(I)	37	Yes	Slough	2B1	Yes	No	No
	Sapelo	(I)	1	No					
	Surrency	(I)	2	Yes	Depression	2B3,3	Yes	No	Yes
	Yonges	(I)	1	Yes	Slough	2B3	Yes	No	No
53: Penney fine sand, 0 to 5 percent slopes	Penney	(C)	94	No					
	Blanton	(I)	1	No					
	Hurricane	(I)	1	No					
	Kershaw	(I)	2	No					
	Ortega	(I)	1	No					
	Ridgewood	(I)	1	No					
55: Pits	Pits	(C)	50	No					
	Pits	(I)	25	Yes	Slough	2B1	Yes	No	No
	Pits	(I)	25	Yes	Depression	2B1,3	Yes	No	Yes
56: Pottsburg fine sand, 0 to 2 percent slopes	Pottsburg	(C)	91	No					
	Boulogne	(I)	1	No					
	Hurricane	(I)	1	No					
	Leon	(I)	1	No					
	Lynn Haven	(I)	1	Yes	Slough	2B1	Yes	No	No
	Pottsburg	(I)	3	Yes	Slough	2B1	Yes	No	No
	Wesconnett	(I)	2	Yes	Depression	2B3,3	Yes	No	Yes

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components (C) and inclusions (I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
58: Pottsburg fine sand, high, 0 to 3 percent slopes	Pottsburg (C)	96	No					
	Boulogne (I)	1	No					
	Hurricane (I)	1	No					
	Leon (I)	1	No					
	Ridgewood (I)	1	No					
62: Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded	Rutlege (C)	90	Yes	Flood plain	2B2	Yes	No	No
	Boulogne (I)	1	No					
	Evergreen (I)	3	Yes	Flood plain	2B2,4	Yes	Yes	No
	Lynn Haven (I)	5	Yes	Slough	2B1	Yes	No	No
	Surrency (I)	1	Yes	Flood plain	2B3,4	Yes	Yes	No
63: Sapelo fine sand, 0 to 2 percent slopes	Sapelo (C)	89	No					
	Albany (I)	2	No					
	Mascotte (I)	4	No					
	Pelham (I)	1	No					
	Pelham (I)	1	Yes	Slough	2B1	Yes	No	No
	Surrency (I)	1	Yes	Depression	2B3,3	Yes	No	Yes
	Yonges (I)	2	Yes	Slough	2B3	Yes	No	No
66: Surrency loamy fine sand, depressional, 0 to 2 percent slopes	Surrency (C)	92	Yes	Depression	2B3,3	Yes	No	Yes
	Lynn Haven (I)	2	Yes	Slough	2B1	Yes	No	No
	Pamlico (I)	2	Yes	Depression	1,3	Yes	No	Yes
	Pelham (I)	2	Yes	Slough	2B1	Yes	No	No
	Yonges (I)	1	Yes	Slough	2B3	Yes	No	No
	Stockade (I)	1	Yes	Depression	2B3,3	Yes	No	No
67: Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded	Surrency (C)	93	Yes	Flood plain	2B3,4	Yes	Yes	No
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Pamlico (I)	1	Yes	Flood plain	1,4	Yes	Yes	No
	Pelham (I)	4	Yes	Slough	2B1	Yes	No	No
	Yonges (I)	1	Yes	Slough	2B3	Yes	No	No

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components (C) and inclusions (I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
68: Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded								
	Tisonia (C)	96	Yes	Salt marsh	1	Yes	No	No
	Boulogne (I)	1	No					
	Leon (I)	1	No					
	Maurepas (I)	2	Yes	Flood plain	1,4	Yes	Yes	No
69: Urban land								
	Urban land (C)	80	No					
	Albany (I)	4	No					
	Pelham (I)	4	Yes	Slough	2B1	Yes	No	No
	Hurricane (I)	4	No					
	Ortega (I)	4	No					
	Leon (I)	4	No					
71: Urban land-Leon-Boulogne complex, 0 to 2 percent slopes								
	Urban land (C)	35	No					
	Leon (C)	30	No					
	Boulogne (C)	25	No					
	Arents (I)	2	No					
	Evergreen (I)	2	Yes	Depression	2B2,3	Yes	No	Yes
	Lynn Haven (I)	2	Yes	Slough	2B1	Yes	No	No
	Pottsburg (I)	2	No					
	Wesconnett (I)	2	Yes	Depression	2B3,3	Yes	No	Yes
72: Urban land-Ortega-Kershaw complex, 0 to 8 percent slopes								
	Urban land (C)	35	No					
	Ortega (C)	30	No					
	Kershaw (C)	25	No					
	Arents (I)	2	No					
	Hurricane (I)	3	No					
	Penney (I)	2	No					
	Ridgewood (I)	3	No					
73: Urban land-Mascotte-Sapelo complex, 0 to 2 percent slopes								
	Urban land (C)	35	No					
	Mascotte (C)	30	No					
	Sapelo (C)	20	No					
	Albany (I)	2	No					
	Arents (I)	2	No					
	Pelham (I)	2	No					
	Pelham (I)	2	Yes	Slough	2B1	Yes	No	No
	Surrency (I)	2	Yes	Depression	2B3,3	Yes	No	Yes

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components (C) and inclusions (I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
74: Pelham-Urban land complex, 0 to 2 percent slopes--------								
	Pelham (C)	30	No					
	Urban land (C)	35	No					
	Arents (I)	2	No					
	Mascotte (I)	3	No					
	Pelham (I)	25	Yes	Slough	2B1	Yes	No	No
	Sapelo (I)	3	No					
	Surrency (I)	2	Yes	Depression	2B3,3	Yes	No	Yes
75: Urban land-Hurricane-Albany complex, 0 to 5 percent slopes--------								
	Urban land (C)	35	No					
	Hurricane (C)	30	No					
	Albany (C)	25	No					
	Leon (I)	1	No					
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Ortega (I)	2	No					
	Ridgewood (I)	5	No					
	Sapelo (I)	1	No					
78: Yonges fine sandy loam, 0 to 2 percent slopes----------------								
	Yonges (C)	88	Yes	Slough	2B3	Yes	No	No
	Lynchburg (I)	5	No					
	Pelham (I)	5	Yes	Slough	2B1	Yes	No	No
	Yulee (I)	2	Yes	Depression	2B3,3	Yes	No	Yes
79: Yulee clay, 0 to 2 percent slopes, frequently flooded----								
	Yulee (C)	94	Yes	Flood plain	2B3,4	Yes	Yes	No
	Surrency (I)	2	Yes	Flood plain	2B3,4	Yes	Yes	No
	Yonges (I)	4	Yes	Slough	2B3	Yes	No	No
80: Goldhead, wet, and Lynn Haven soils, 2 to 5 percent slopes								
	Goldhead (C)	45	Yes	Marine terrace	2B1	Yes	No	No
	Lynn Haven (C)	40	Yes	Marine terrace	2B1	Yes	No	No
	Albany (I)	2	No					
	Boulogne (I)	4	No					
	Goldhead (I)	5	No					
	Mascotte (I)	3	No					
	Surrency (I)	1	Yes	Flood plain	2B3,4	Yes	Yes	No

See footnote at end of table.

Table 7.—Comprehensive Hydric Soils List—Continued

Map unit name and and map symbol	Components (C) and inclusions (I)*	Percent of map unit	Hydric	Local landform	Hydric soils criteria: Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
81: Stockade fine sandy loam, depressional, 0 to 2 percent slopes								
	Stockade (C)	91	Yes	Depression	2B3,3	Yes	No	Yes
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Pelham (I)	2	Yes	Slough	2B1	Yes	No	No
	Yonges (I)	3	Yes	Slough	2B3	Yes	No	No
	Yulee (I)	3	Yes	Depression	2B3,3	Yes	No	Yes
82: Pelham fine sand, depressional, 0 to 2 percent slopes--------								
	Pelham (C)	88	Yes	Depression	2B1,3	Yes	No	Yes
	Pelham (I)	5	No					
	Surrency (I)	5	Yes	Depression	2B3,3	Yes	No	Yes
	Yonges (I)	2	Yes	Slough	2B3	Yes	No	No
86: Yulee clay, depressional, 0 to 2 percent slopes--------								
	Yulee (C)	90	Yes	Depression	2B3,3	Yes	No	Yes
	Pelham (I)	1	Yes	Slough	2B1	Yes	No	No
	Stockade (I)	3	Yes	Depression	2B3,3	Yes	No	Yes
	Yonges (I)	6	Yes	Slough	2B3	Yes	No	No
87: Dorovan muck, depressional, 0 to 2 percent slopes--------								
	Dorovan (C)	87	Yes	Depression	1,3	Yes	No	Yes
	Evergreen (I)	1	Yes	Depression	2B2,3	Yes	No	Yes
	Lynn Haven (I)	1	Yes	Slough	2B1	Yes	No	No
	Surrency (I)	1	Yes	Depression	2B3,3	Yes	No	Yes
	Wesconnett (I)	1	Yes	Depression	2B3,3	Yes	No	Yes
	Pamlico (I)	9	Yes	Depression	1,3	Yes	No	Yes
88: Lynchburg fine sand, 0 to 2 percent slopes								
	Lynchburg (C)	83	No					
	Mascotte (I)	2	No					
	Pelham (I)	5	No					
	Surrency (I)	3	Yes	Depression	2B3,3	Yes	No	Yes
	Yonges (I)	7	Yes	Slough	2B3	Yes	No	No

* There may be small areas of included soils or miscellaneous areas that significantly affect the use and management of the map unit but are too small to be delineated on the soil map at the map's original scale. These areas may be designated by spot symbols on the maps. The symbols are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II.

Table 8.—Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that inf
available)

Soil name and map symbol	Ordination symbol	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume[1]	Potential productivity: Site quality[2]	Potential productivity: Productivity[3]	
							cu ft/ac/yr		Cd/ac/yr	
2 Albany	11W	Moderate	Moderate	Moderate	Slash pine	85	113	60	1.2	S
					Loblolly pine	95	113	---	---	
					Longleaf pine	80	101	---	---	
12 Blanton	11S	Moderate	Moderate	Slight	Slash pine	90	121	50	1.0	S
					Loblolly pine	85	113	---	---	
					Longleaf pine	70	79	---	---	
					Bluejack oak	---	---	---	---	
					Turkey oak	---	---	---	---	
					Southern red oak	---	---	---	---	
					Live oak	---	---	---	---	
14 Boulogne	11W	Severe	Severe	Severe	Slash pine	85	113	70	1.6	S
					Loblolly pine	80	101	---	---	
					Longleaf pine	70	79	---	---	
					Water oak	---	---	---	---	
19 Cornelia	8S	Severe	Severe	Moderate	Slash pine	65	79	50	1.0	S
					Longleaf pine	65	67	---	---	
					Live oak	---	---	---	---	
					Southern magnolia	---	---	---	---	
					Redbay	---	---	---	---	
					Turkey oak	---	---	---	---	
24:[5]										
Hurricane	11W	Moderate	Moderate	Moderate	Slash pine	90	121	65	1.4	S
					Loblolly pine	90	121	---	---	
					Longleaf pine	75	88	---	---	
					Blackjack oak	---	---	---	---	
					Post oak	---	---	---	---	
					Turkey oak	---	---	---	---	
Ridgewood	10W	Moderate	Moderate	Moderate	Slash pine	80	106	60	1.2	S
					Longleaf pine	65	67	---	---	
					Laurel oak	---	---	---	---	
					Live oak	---	---	---	---	
					Water oak	---	---	---	---	
					Turkey oak	---	---	---	---	

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume[1]	Potential productivity: Site quality[2]	Potential productivity: Productivity[3]	
							cu ft/ ac/yr		Cd/ac/yr	
25, 26 Kershaw	8S	Moderate	Severe	Slight	Slash pine	65	79	---	---	S
					Longleaf pine	55	45	---	---	
					Sand pine	---	---	40	0.8	
29, 31 Kureb	6S	Moderate	Severe	Slight	Longleaf pine	53	43	---	---	L
					Sand pine	---	---	35	0.7	
32 Leon	10W	Moderate	Moderate	Moderate	Slash pine	80	106	55	1.0	S
					Loblolly pine	75	95	---	---	
					Longleaf pine	70	79	---	---	
35 Lynn Haven	11W	Moderate	Moderate	Severe	Slash pine	85	113	65	1.4	S
					Loblolly pine	80	104	---	---	
					Longleaf pine	70	79	---	---	
					Pond pine	70	53	---	---	
					Water oak	---	---	---	---	
					Sweetbay	---	---	---	---	
36 Mandarin	8S	Moderate	Severe	Moderate	Slash pine	70	88	55	1.0	S
					Longleaf pine	60	56	---	---	
					Live oak	---	---	---	---	
38 Mascotte	11W	Moderate	Moderate	Moderate	Slash pine	85	113	60	1.2	S
					Loblolly pine	80	104	---	---	
					Longleaf pine	70	79	---	---	
44:[5]										
Mascotte	11W	Moderate	Moderate	Moderate	Slash pine	85	113	60	1.2	S
					Loblolly pine	80	104	---	---	
					Longleaf pine	70	87	---	---	
Pelham	11W	Severe	Severe	Moderate	Slash pine	90	121	65	1.4	S
					Loblolly pine	90	121	---	---	
					Longleaf pine	80	101	---	---	
					Sweetgum	---	---	---	---	
					Blackgum	---	---	---	---	
					Water oak	---	---	---	---	
46 Ortega	10S	Moderate	Moderate	Moderate	Slash pine	80	106	55	1.0	S
					Loblolly pine	80	104	---	---	
					Longleaf pine	70	79	---	---	
					Blackjack oak	---	---	---	---	
					Post oak	---	---	---	---	
					Turkey oak	---	---	---	---	

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Site index	Volume[1]	Site quality[2]	Productivity[3]
							cu ft/ac/yr		Cd/ac/yr
51 Pelham	11W	Severe	Severe	Moderate	Slash pine	90	121	65	1.4
					Loblolly pine	90	121	---	---
					Longleaf pine	80	101	---	---
					Sweetgum	---	---	---	---
					Blackgum	---	---	---	---
					Water oak	---	---	---	---
53 Penney	8S	Moderate	Moderate	Moderate	Sand pine	75	63	---	---
					Slash pine	70	88	50	0.9
					Longleaf pine	60	56	---	---
					Turkey oak	---	---	---	---
					Bluejack oak	---	---	---	---
					Post oak	---	---	---	---
					Live oak	---	---	---	---
56 Pottsburg	10W	Moderate	Moderate	Moderate	Slash pine	80	106	60	1.2
					Loblolly pine	70	87	---	---
					Longleaf pine	65	67	---	---
					Live oak	---	---	---	---
					Water oak	---	---	---	---
58 Pottsburg	10W	Moderate	Moderate	Moderate	Slash pine	80	106	65	1.3
					Loblolly pine	80	104	---	---
					Longleaf pine	70	79	---	---
					Bluejack oak	---	---	---	---
					Water oak	---	---	---	---
63 Sapelo	10W	Moderate	Moderate	Moderate	Slash pine	77	101	60	1.2
					Loblolly pine	77	98	---	---
					Longleaf pine	65	67	---	---
78 Yonges	12W	Severe	Severe	---	Slash pine	105	153	---	---
					Loblolly pine	105	153	---	---
					Sweetgum	---	---	---	---
					Water oak	---	---	---	---

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Site index	Volume[1]	Site quality[2]	Productivity[3]
							cu ft/ ac/yr		Cd/ac/yr
80:[5]									
Goldhead----------	10W	Moderate	Severe	Moderate	Slash pine----------	90	121	65	1.4
					Loblolly pine-------	90	121	---	---
					Longleaf pine-------	65	67	---	---
					Baldcypress---------	---	---	---	---
					Blackgum------------	---	---	---	---
					Cabbage-palm--------	---	---	---	---
					Laurel oak----------	---	---	---	---
					Sweetgum------------	---	---	---	---
					Water oak-----------	---	---	---	---
Lynn Haven--------	11W	Moderate	Moderate	Severe	Slash pine----------	85	113	65	1.4
					Loblolly pine-------	80	104	---	---
					Longleaf pine-------	70	79	---	---
					Pond pine-----------	70	53	---	---
					Water oak-----------	---	---	---	---
					Sweetbay------------	---	---	---	---
88----------------	9W	Moderate	Slight	Severe	Slash pine----------	86	116	70	1.6
Lynchburg					Loblolly pine-------	86	116	---	---
					Longleaf pine-------	74	86	---	---
					Yellow-poplar-------	---	---	---	---
					Sweetgum------------	---	---	---	---
					Southern red oak----	---	---	---	---
					White oak-----------	---	---	---	---
					Blackgum------------	---	---	---	---

1 Volume is the average yearly growth per acre based on a 50-year average of corresponding site index.
2 Site quality estimates for slash pine are on a 25-year basis.
3 Productivity is expressed as the average annual cords per acre based on a 25-year average of correspondin
4 Adequate surface drainage or bedding is needed to regenerate the forest stand through the planting of tre
potential productivity.
5 See description of the map unit for composition and behavior characteristics of the map unit.

Table 9.—Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "moderate" and "severe")

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
2--------------------- Albany	Severe: wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
6--------------------- Aquic Quartzipsamments	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
7--------------------- Arents	Severe: too sandy.	Severe: too sandy.	Moderate: wetness.	Severe: too sandy.	Severe: droughty.
9--------------------- Arents	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
10*------------------- Beaches	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, excess salt.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: excess salt, wetness, droughty.
12-------------------- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
14-------------------- Boulogne	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
18-------------------- Corolla	Severe: flooding, too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
19-------------------- Cornelia	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
22*:					
Evergreen------------	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Wesconnett-----------	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
23*:					
Fripp----------------	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
Corolla--------------	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
24*:					
Hurricane------------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Ridgewood------------	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
25, 26 Kershaw	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
29 Kureb	Severe: too sandy, too acid.	Severe: too sandy, too acid.	Severe: too sandy, too acid.	Severe: too sandy.	Severe: too acid, droughty.
31 Kureb	Severe: too sandy, too acid.	Severe: too sandy, too acid.	Severe: slope, too sandy, too acid.	Severe: too sandy.	Severe: too acid, droughty.
32 Leon	Severe: wetness, too sandy, too acid.	Severe: wetness, too sandy, too acid.	Severe: too sandy, wetness, too acid.	Severe: wetness, too sandy.	Severe: too acid, wetness.
33 Leon	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, excess salt.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: excess salt, wetness, flooding.
35 Lynn Haven	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
36 Mandarin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty.
38 Mascotte	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
40 Maurepas	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
42*:					
Newhan	Severe: too sandy.	Severe: too sandy, excess salt.	Severe: slope, too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, too acid, droughty.
Corolla	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
44*:					
Mascotte	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Pelham	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
46 Ortega	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.

See footnote at end of table.

Table 9.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
49: Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, too acid.	Severe: ponding, excess humus.	Severe: too acid, ponding, excess humus.
50: Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: too acid, ponding, flooding.
51: Pelham	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
53: Penney	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
55*: Pits	Variable	Variable	Variable	Variable	Variable.
56: Pottsburg	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
58: Pottsburg	Severe: wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
62: Rutlege	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy.	Severe: wetness, too sandy.	Severe: wetness.
63: Sapelo	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
66: Surrency	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
67: Surrency	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, flooding.	Severe: wetness, too sandy.	Severe: wetness, flooding.
68: Tisonia	Severe: flooding, wetness, percs slowly.	Severe: wetness, excess humus, excess salt.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: excess salt, excess sulfur, wetness.
69*: Urban land	Variable	Variable	Variable	Variable	Variable.
71*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Leon	Severe: wetness, too sandy, too acid.	Severe: wetness, too sandy, too acid.	Severe: too sandy, wetness, too acid.	Severe: wetness, too sandy.	Severe: too acid, wetness.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
71*:					
Boulogne	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
72*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Ortega	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Kershaw	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
73*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Mascotte	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Sapelo	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
74*:					
Pelham	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
Urban land	Variable	Variable	Variable	Variable	Variable.
75*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Hurricane	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Albany	Severe: wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness.	Severe: too sandy.	Severe: droughty.
78 Yonges	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
79 Yulee	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, flooding.	Severe: wetness, too clayey.	Severe: wetness, flooding, too clayey.
80*:					
Goldhead	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
Lynn Haven	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness.
81 Stockade	Severe	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
82-------------------- Pelham	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: ponding, too sandy.	Severe: ponding.
86-------------------- Yulee	Severe: ponding, too clayey.	Severe: ponding, too clayey.	Severe: too clayey, ponding.	Severe: ponding, too clayey.	Severe: ponding, too clayey.
87-------------------- Dorovan	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
88-------------------- Lynchburg	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.—Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
2------------------ Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor
6------------------ Aquic Quartzipsamments	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Poor	Fair	Poor
7------------------ Arents	Very Poor	Poor	Poor	Very Poor	Very Poor	Very Poor	Very Poor	Poor	Poor	Very poor
9------------------ Arents	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.
10*---------------- Beaches	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
12----------------- Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
14----------------- Boulogne	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
18----------------- Corolla	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
19----------------- Cornelia	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
22*:										
Evergreen---------	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good
Wesconnett--------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Good
23*:										
Fripp-------------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Corolla-----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
24*:										
Hurricane---------	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Ridgewood---------	Poor	Poor	Fair	Fair	Fair	Poor	Poor	Poor	Fair	Poor
25, 26------------- Kershaw	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
29, 31------------- Kureb	Very poor.	Poor	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
32 Leon	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
33 Leon	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Fair
35 Lynn Haven	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair
36 Mandarin	Very poor.	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
38 Mascotte	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
40 Maurepas	Very poor.	Very poor.	Very poor.	Very poor.	---	Fair	Very poor.	Very poor.	Very poor.	Fair
42*:										
Newhan	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Corolla	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
44*:										
Mascotte	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
Pelham	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
46 Ortega	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
49 Pamlico	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good
50 Pamlico	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
51 Pelham	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
53 Penney	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
55* Pits	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
56 Pottsburg	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
58 Pottsburg	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Poor	Poor	Very poor.
62 Rutlege	Very poor.	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
63------------------ Sapelo	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair
66, 67------------- Surrency	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair
68------------------ Tisonia	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Fair	Very poor.	Very poor.	Poor
69*. Urban land										
71*: Urban land.										
Leon---------------	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
Boulogne----------	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
72*: Urban land.										
Ortega------------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Kershaw-----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
73*: Urban land.										
Mascotte----------	Poor	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair	Poor
Sapelo------------	Poor	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair
74*: Pelham------------	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Urban land.										
75*: Urban land.										
Hurricane---------	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Albany------------	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor
78------------------ Yonges	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
79------------------ Yulee	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good
80*: Goldhead----------	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Poor
Lynn Haven--------	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair

See footnote at end of table.

Table 10.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
81------------------ Stockade	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good
82------------------ Pelham	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
86------------------ Yulee	Very poor.	Very poor.	Very poor.	Poor	Poor	Fair	Good	Very poor.	Very poor.	Good
87------------------ Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good
88------------------ Lynchburg	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.—Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2----------------- Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
6----------------- Aquic Quartzipsamments	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
7, 9-------------- Arents	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
10*--------------- Beaches	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: excess salt, wetness, droughty.
12---------------- Blanton	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Severe: droughty.
14---------------- Boulogne	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
18---------------- Corolla	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: droughty.
19---------------- Cornelia	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
22*:						
Evergreen--------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, excess humus.
Wesconnett-------	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
23*:						
Fripp------------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
Corolla----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: droughty.
24*:						
Hurricane--------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
Ridgewood--------	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.

See footnote at end of table.

Table 11.–Building Site Development–Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
25, 26 Kershaw	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
29 Kureb	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: too acid, droughty.
31 Kureb	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: too acid, droughty.
32 Leon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: too acid, wetness.
33 Leon	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: excess salt, wetness, flooding.
35 Lynn Haven	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
36 Mandarin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
38 Mascotte	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
40 Maurepas	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
42*:						
Newhan	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: excess salt, too acid, droughty.
Corolla	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: droughty.
44*:						
Mascotte	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
46 Ortega	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
49---------------- Pamlico	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: low strength, ponding.	Severe: too acid, ponding, excess humus.
50---------------- Pamlico	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, flooding, ponding.	Severe: too acid, ponding, flooding.
51---------------- Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
53---------------- Penney	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
55*--------------- Pits	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
56---------------- Pottsburg	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
58---------------- Pottsburg	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
62---------------- Rutlege	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
63---------------- Sapelo	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
66---------------- Surrency	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
67---------------- Surrency	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
68---------------- Tisonia	Severe: wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, shrink-swell, low strength.	Severe: excess salt, excess sulfur, wetness.
69*--------------- Urban land	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
71*:						
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable.
Leon-------------	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: too acid, wetness.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
71*:						
Boulogne	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
72*:						
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Ortega	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Severe: droughty.
Kershaw	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
73*:						
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Mascotte	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Sapelo	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
74*:						
Pelham	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
75*:						
Urban land	Variable	Variable	Variable	Variable	Variable	Variable.
Hurricane	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.
78 Yonges	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
79 Yulee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding, too clayey.
80*:						
Goldhead	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
Lynn Haven	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
81----------------- Stockade	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
82----------------- Pelham	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
86----------------- Yulee	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, too clayey.
87----------------- Dorovan	Severe: excess humus, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: subsides, ponding.	Severe: ponding, excess humus.
88----------------- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: too acid, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.—Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "poor," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2 Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
6 Aquic Quartzipsamments	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
7 Arents	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
9 Arents	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
10* Beaches	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
12 Blanton	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
14 Boulogne	Severe: wetness, percs slowly, poor filter.	Severe: seepage.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
18 Corolla	Severe: wetness, poor filter.	Severe: seepage, slope, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
19 Cornelia	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
22*:					
Evergreen	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Wesconnett	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
23*:					
Fripp	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Corolla	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
24*:					
Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Ridgewood	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
25, 26 Kershaw	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
29 Kureb	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
31 Kureb	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
32 Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy, too acid.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
33 Leon	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
35 Lynn Haven	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
36 Mandarin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy.
38 Mascotte	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
40 Maurepas	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.
42*:					
Newhan	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
42*:					
Corolla	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
44*:					
Mascotte	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
Pelham	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
46 Ortega	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
49 Pamlico	Severe: ponding, poor filter.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
50 Pamlico	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, excess humus, ponding.
51 Pelham	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
53 Penney	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
55* Pits	Variable	Variable	Variable	Variable	Variable.
56, 58 Pottsburg	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
62 Rutlege	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
63 Sapelo	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
66 Surrency	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding, too sandy.	Severe: seepage, ponding.	Poor: too sandy, ponding.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
67 Surrency	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, wetness, too sandy.	Severe: flooding, seepage, wetness.	Poor: too sandy, wetness.
68 Tisonia	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
69* Urban land	Variable	Variable	Variable	Variable	Variable.
71*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy, too acid.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Boulogne	Severe: wetness, percs slowly, poor filter.	Severe: seepage.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
72*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Ortega	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Kershaw	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
73*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Mascotte	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
Sapelo	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
74*:					
Pelham	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
Urban land	Variable	Variable	Variable	Variable	Variable.

See footnote at end of table.

Table 12.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
75*:					
Urban land	Variable	Variable	Variable	Variable	Variable.
Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
78 Yonges	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
79 Yulee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
80*:					
Goldhead	Severe: wetness, poor filter.	Severe: seepage.	Severe: wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Lynn Haven	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
81 Stockade	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding, thin layer.
82 Pelham	Severe: ponding.	Severe: seepage, ponding.	Severe: ponding.	Severe: seepage, ponding.	Poor: ponding.
86 Yulee	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
87 Dorovan	Severe: subsides, ponding.	Severe: excess humus, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: ponding, excess humus.
88 Lynchburg	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness, too clayey, too acid.	Severe: seepage, wetness.	Poor: too clayey, wetness, too acid.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.—Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2 Albany	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
6 Aquic Quartzipsamments	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
7 Arents	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
9 Arents	Poor: thin layer.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy.
10* Beaches	Poor: wetness.	Probable	Improbable: too sandy.	Poor: area reclaim, too sandy, excess salt.
12 Blanton	Good	Probable	Improbable: too sandy.	Poor: too sandy.
14 Boulogne	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
18 Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
19 Cornelia	Good	Probable	Improbable: too sandy.	Poor: too sandy.
22*:				
Evergreen	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Wesconnett	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
23*:				
Fripp	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
24*:				
Hurricane	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Ridgewood	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
25, 26 Kershaw	Good	Probable	Improbable: too sandy.	Severe: seepage.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
29, 31 Kureb	Good	Probable	Improbable: too sandy.	Poor: too sandy, too acid.
32 Leon	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness, too acid.
33 Leon	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt, wetness.
35 Lynn Haven	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
36 Mandarin	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
38 Mascotte	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
40 Maurepas	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
42*:				
Newhan	Good	Probable	Improbable: too sandy.	Poor: too sandy, excess salt, too acid.
Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
44*:				
Mascotte	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
46 Ortega	Good	Probable	Improbable: too sandy.	Poor: too sandy.
49, 50 Pamlico	Poor: low strength, wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness, too acid.
51 Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
53 Penney	Good	Probable	Improbable: too sandy.	Poor: too sandy.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
55*: Pits	Variable	Variable	Variable	Variable.
56: Pottsburg	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
58: Pottsburg	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
62: Rutlege	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
63: Sapelo	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness.
66, 67: Surrency	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
68: Tisonia	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, wetness.
69*: Urban land	Variable	Variable	Variable	Variable.
71*:				
Urban land	Variable	Variable	Variable	Variable.
Leon	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness, too acid.
Boulogne	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
72*:				
Urban land	Variable	Variable	Variable	Variable.
Ortega	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Kershaw	Good	Probable	Improbable: too sandy.	Severe: seepage.
73*:				
Urban land	Variable	Variable	Variable	Variable.
Mascotte	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
Sapelo	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: too sandy, wetness.

See footnote at end of table.

Table 13.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
74*:				
Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
Urban land	Variable	Variable	Variable	Variable.
75*:				
Urban land	Variable	Variable	Variable	Variable.
Hurricane	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
Albany	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
78 Yonges	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
79 Yulee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
80*:				
Goldhead	Poor: wetness.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, wetness.
Lynn Haven	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
81 Stockade	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
82 Pelham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, wetness.
86 Yulee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
87 Dorovan	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
88 Lynchburg	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness, too acid.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "moderate," and "severe." The information in this table indicates the dominant soil condition but does need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrace and diversio
2----------------- Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Severe: slow refill, cutbanks cave.	Wetness, droughty.	Wetness, too sandy soil blow
6----------------- Aquic Quartzipsamments	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy soil blow
7----------------- Arents	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy soil blow
9----------------- Arents	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Subsides, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy soil blow
10*--------------- Beaches	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: salty water, cutbanks cave.	Flooding, slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy
12---------------- Blanton	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blow
14---------------- Boulogne	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy soil blow
18---------------- Corolla	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Droughty, fast intake	Wetness, too sandy
19---------------- Cornelia	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy soil blow

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrac[e]s and diversi[ons]
22*:						
Evergreen	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding	Ponding, too sand[y]
Wesconnett	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sand[y]
23*:						
Fripp	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sand[y] soil blo[wing]
Corolla	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sand[y]
24*:						
Hurricane	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sand[y] soil blo[wing]
Ridgewood	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sand[y] soil blo[wing]
25, 26 Kershaw	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy soil blo[wing]
29 Kureb	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy soil blo[wing]
31 Kureb	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sand[y] soil blo[wing]
32 Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave, too acid.	Wetness, droughty.	Wetness, too sand[y] soil blo[wing]

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrace and diversio
33---------------- Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave, excess salt.	Wetness, droughty, fast intake.	Wetness, too sandy
35---------------- Lynn Haven	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy soil blow
36---------------- Mandarin	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Too sandy, soil blow wetness.
38---------------- Mascotte	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable------	Wetness, droughty, fast intake.	Wetness, soil blow
40---------------- Maurepas	Severe: seepage.	Severe: excess humus, ponding.	Slight---------	Ponding, flooding, subsides.	Ponding, flooding.	Ponding---
42*:						
Newhan-----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy soil blow
Corolla----------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy
44*:						
Mascotte---------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable------	Wetness, droughty, fast intake.	Wetness, soil blow
Pelham-----------	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable------	Fast intake, wetness.	Wetness, soil blow

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrace and diversi
46---------------- Ortega	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy soil blo
49---------------- Pamlico	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, soil blowing.	Ponding, too sand soil blo
50---------------- Pamlico	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding, too sand soil blo
51---------------- Pelham	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable------	Fast intake, wetness.	Wetness, soil blo
53---------------- Penney	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy soil blo
55*--------------- Pits	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-
56, 58------------ Pottsburg	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sand soil blo
62---------------- Rutlege	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, fast intake.	Wetness, too sand
63---------------- Sapelo	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sand soil blo
66---------------- Surrency	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sand

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrac and diversi
67 Surrency	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Too sandy wetness.
68 Tisonia	Slight	Severe: hard to pack, wetness, excess salt.	Severe: slow refill, salty water.	Percs slowly, flooding, subsides.	Wetness, soil blowing, percs slowly.	Wetness, soil blo percs sl
69* Urban land	Variable	Variable	Variable	Variable	Variable	Variable-
71*:						
Urban land	Variable	Variable	Variable	Variable	Variable	Variable-
Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave, too acid.	Wetness, droughty.	Wetness, too sand soil blo
Boulogne	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sand soil blo
72*:						
Urban land	Variable	Variable	Variable	Variable	Variable	Variable-
Ortega	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy soil blo
Kershaw	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy soil blo
73*:						
Urban land	Variable	Variable	Variable	Variable	Variable	Variable-
Mascotte	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable	Wetness, droughty, fast intake.	Wetness, soil blo

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrace and diversio
73*:						
Sapelo----------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy soil blow
74*:						
Pelham----------	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable------	Fast intake, wetness.	Wetness, soil blow
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable--
75*:						
Urban land-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable-------	Variable--
Hurricane--------	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty.	Wetness, too sandy soil blow
Albany----------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: slow refill, cutbanks cave.	Severe: slow refill, cutbanks cave.	Wetness, droughty.	Wetness, too sandy soil blow
78--------------- Yonges	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable------	Wetness, fast intake, soil blowing.	Wetness, soil blow
79--------------- Yulee	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slo
80*:						
Goldhead--------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy soil blow
80*:						
Lynn Haven-------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy soil blow

See footnote at end of table.

Table 14.—Water Management—Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terrace and diversio
81----------------- Stockade	Slight----------	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly.	Ponding, soil blowing.	Ponding, soil blow percs sl
82----------------- Pelham	Severe: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding--------	Ponding, fast intake.	Ponding---
86----------------- Yulee	Moderate: seepage.	Severe: ponding.	Severe: slow refill.	Ponding--------	Ponding, slow intake.	Ponding---
87----------------- Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, subsides.	Ponding, soil blowing.	Ponding, soil blo
88----------------- Lynchburg	Moderate seepage.	Severe: piping, wetness.	Moderate: slow refill.	Favorable------	Wetness, soil blowing.	Wetness, soil blo

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.—Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
2---------------- Albany	0-50	Fine sand--------	SM, SP-SM	A-2,A-2-4	100	100	75-100	10-20	---	NP
	50-63	Fine sandy loam	SM	A-2	100	100	75-100	22-30	---	NP
	63-80	Sandy clay loam, fine sandy loam.	SC, SM, SC-SM	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-20
6---------------- Aquic Quartzipsamments	0-80	Fine sand--------	SP, SP-SM	A-3	100	100	85-100	2-10	---	NP
7---------------- Arents	0-60	Variable---------								
9---------------- Arents	0-24	Fine sand--------	SP, SP-SM	A-3	100	100	80-90	2-10	---	NP
	24-80	Variable---------	---	---	---	---	---	---	---	---
10*-------------- Beaches	0-6	Fine sand--------	SP	A-1, A-3	100	75-100	5-85	0-5	0-14	NP
	6-80	Fine sand--------	SP	A-1, A-3	100	75-100	5-85	0-5	0-14	NP
12--------------- Blanton	0-54	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	90-100	65-100	5-20	---	NP
	54-80	Sandy clay loam, sandy loam, sandy clay.	SC, SC-SM, SM	A-4, A-2-4, A-2-6, A-6	100	95-100	65-100	25-50	<28	NP-22
14--------------- Boulogne	0-6	Fine sand--------	SP, SP-SM	A-3	100	100	85-100	3-10	---	NP
	6-16	Fine sand--------	SP-SM, SM, SP	A-3, A-2-4	100	100	85-100	3-20	---	NP
	16-31	Fine sand--------	SP-SM, SP	A-3	100	100	85-100	3-10	---	NP
	31-39	Fine sand, loamy fine sand.	SP-SM, SM	A-2-4	100	100	85-95	12-20	---	NP
	39-80	Fine sand--------	SP-SM, SM	A-2-4	100	100	85-95	12-20	---	NP
18--------------- Corolla	0-80	Fine sand--------	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-100	1-12	0-14	NP
19--------------- Cornelia	0-39	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	2-10	---	NP
	39-80	Fine sand, loamy fine sand.	SP, SP-SM, SM	A-3, A-2-4	100	100	90-100	3-15	---	NP
22*:										
Evergreen-------	0-11	Muck-------------	PT	---	---	---	---	---	---	---
	11-26	Fine sand--------	SP, SP-SM, SM	A-3, A-2-4	100	100	80-100	1-12	---	NP
	26-80	Fine sand, loamy fine sand.	SP, SP-SM	A-3	100	100	80-100	1-12	---	NP
Wesconnett------	0-2	Fine sand--------	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
	2-32	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	---	NP
	32-44	Fine sand--------	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
	44-80	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	---	NP

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
23*:										
Fripp-----------	0-6	Fine sand--------	SP, SP-SM	A-3	100	98-100	85-99	0-5	---	NP
	6-80	Fine sand--------	SP, SP-SM	A-3	100	98-100	85-99	0-5	---	NP
Corolla---------	0-80	Fine sand--------	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-95	1-12	0-14	NP
24*:										
Hurricane-------	0-5	Fine sand--------	SP, SP-SM	A-3	100	100	78-100	4-8	0-14	NP
	5-68	Fine sand--------	SP, SP-SM	A-3	100	100	78-100	4-8	0-14	NP
	68-77	Fine sand, fine loamy sand.	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	0-14	NP
	77-80	Fine sand--------	SP, SP-SM, SM	A-3, A-2-4	100	100	90-100	4-15	0-14	NP
Ridgewood-------	0-7	Fine sand--------	SP-SM	A-3, A-2-4	100	100	90-100	5-12	---	NP
	7-80	Fine sand--------	SP-SM, SP	A-3, A-2-4	100	100	90-100	2-12	---	NP
25, 26----------- Kershaw	0-80	Fine sand--------	SP, SP-SM, SW	A-2, A-3	98-100	98-100	50-80	1-7	---	NP
29, 31----------- Kureb	0-82	Fine sand--------	SP, SP-SM	A-3	100	100	60-100	0-7	0-14	NP
32--------------- Leon	0-5	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	0-14	NP
	5-18	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	0-14	NP
	18-37	Fine sand, loamy fine sand.	SM, SP-SM, SP	A-3, A-2-4	100	100	80-100	3-20	0-14	NP
	37-45	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	0-14	NP
	45-80	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	3-20	0-14	NP
33--------------- Leon	0-18	Fine sand--------	SP, SP-SM	A-3	100	100	85-100	2-10	---	NP
	18-45	Fine sand--------	SP-SM, SM, SP	A-3, A-2-4	100	100	85-100	2-15	---	NP
	45-80	Fine sand--------	SP-SM, SM, SP	A-3	100	100	85-100	2-8	---	NP
35--------------- Lynn Haven	0-13	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	---	---	NP
	13-21	Fine sand--------	SP, SP-SM, SM	A-3, A-2-4	100	100	80-100	2-14	---	NP
	21-62	Fine sand, loamy fine sand.	SM, SP-SM	A-3, A-2-4	100	100	80-100	5-20	---	NP
	62-80	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
36--------------- Mandarin	0-26	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	1-10	---	NP
	26-40	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	90-100	1-15	---	NP
	40-73	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	1-7	---	NP
	73-80	Fine sand, loamy fine sand.	SP, SP-SM	A-3, A-2-4	100	100	90-100	3-12	---	NP

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
38--------------- Mascotte	0-5	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	5-15	Fine sand--------	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-15	---	NP
	15-25	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	8-15	---	NP
	25-28	Fine sandy loam, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	28-58	Sandy clay loam, fine sandy loam.	SC, SC-SM, SM	A-2, A-4, A-6	100	100	85-100	19-45	<38	NP-15
	58-80	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	8-20	---	NP
40--------------- Maurepas	0-80	Muck-------------	PT	A-8	---	---	---	---	---	---
42*: Newhan----------	0-80	Fine sand--------	SP, SP-SM	A-3	95-100	95-100	60-99	0-5	0-14	NP
Corolla---------	0-80	Fine sand--------	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-95	1-12	0-14	NP
44*: Mascotte--------	0-5	Fine sand--------	SP-SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	5-15	Fine sand--------	SP-SM	A-3, A-2-4	100	100	85-100	5-15	---	NP
	15-25	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	8-15	---	NP
	25-28	Fine sandy loam, loamy fine sand.	SP-SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	28-58	Sandy clay loam, fine sandy loam.	SC, SC-SM, SM	A-2, A-4, A-6	100	100	85-100	19-45	<38	NP-15
	58-80	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	8-20	---	NP
Pelham----------	0-21	Fine sand--------	SM, SP-SM	A-2	100	95-100	75-100	10-25	---	NP
	21-60	Sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	65-100	27-50	15-30	2-12
	60-80	Sandy clay loam, fine sandy loam, sandy clay.	SC, SM, ML, CL	A-2, A-4, A-6, A-7	100	95-100	65-100	27-65	20-45	3-20
46--------------- Ortega	0-5	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	3-8	---	NP
	5-82	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	2-7	---	NP
49--------------- Pamlico	0-35	Muck-------------	PT	---	---	---	---	---	---	---
	35-80	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	10-20	NP
50--------------- Pamlico	0-35	Muck-------------	PT	---	---	---	---	---	---	---
	35-80	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	10-20	NP
51--------------- Pelham	0-21	Fine sand--------	SM, SP-SM	A-2	100	95-100	75-100	10-25	---	NP
	21-60	Sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	65-100	27-50	15-30	2-12
	60-80	Sandy clay loam, fine sandy loam, sandy clay.	SC, SM, ML, CL	A-2, A-4, A-6, A-7	100	95-100	65-100	27-65	20-45	3-20

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
53---------------Penney	0-5	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	5-48	Fine sand--------	SP, SP-SM	A-3	100	95-100	75-100	2-8	---	NP
	48-80	Fine sand--------	SP-SM	A-3, A-2-4	100	95-100	75-100	5-12	---	NP
55*--------------Pits	0-80	Variable---------	---	---	---	---	---	---	---	---
56---------------Pottsburg	0-3	Fine sand--------	SP, SP-SM	A-3	100	100	80-100	2-10	---	NP
	3-57	Fine sand--------	SP, SP-SM	A-3	100	100	80-100	1-8	---	NP
	57-80	Fine sand, loamy fine sand.	SP-SM, SP, SM	A-3, A-2-4	100	100	80-100	4-18	---	NP
58---------------Pottsburg	0-3	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	2-9	---	NP
	3-57	Fine sand--------	SP-SM, SP	A-3	100	100	90-100	2-9	---	NP
	57-80	Fine sand--------	SP-SM, SP	A-3	100	100	90-100	4-9	---	NP
62---------------Rutlege	0-10	Mucky fine sand	SM, SP-SM	A-2, A-3	5-100	95-100	70-100	5-35	---	NP
	10-80	Fine sand, loamy fine sand.	SP-SM, SP, SM	A-2, A-3	5-100	95-100	50-80	2-25	<20	NP
63---------------Sapelo	0-23	Fine sand--------	SM, SP, SP-SM	A-2, A-3	100	100	85-100	4-20	---	NP
	23-32	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	80-100	8-20	---	NP
	32-56	Fine sand--------	SM, SP, SP-SM	A-2, A-3	100	100	75-100	4-20	---	NP
	56-80	Fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	100	80-100	20-50	<40	NP-20
66, 67-----------Surrency	0-14	Loamy fine sand	SP-SM, SM, SC-SM	A-3, A-2-4	100	95-100	50-100	5-20	0-20	NP-5
	14-26	Loamy fine sand, fine sand.	SP-SM, SM	A-2-4	100	95-100	50-100	10-26	0-14	NP
	26-70	Fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2	100	95-100	75-100	22-35	0-30	NP-10
	70-80	Sandy clay loam	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	80-100	30-44	0-35	NP-15
68---------------Tisonia	0-18	Mucky peat-------	PT	A-8	---	---	---	---	0-14	---
	18-65	Clay-------------	CH	A-7	100	100	95-100	90-100	80-95	50-60
69*--------------Urban land	0-6	Variable---------	---	---	---	---	---	---	---	---
71*:										
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---
Leon------------	0-5	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	0-14	NP
	5-18	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	0-14	NP
	18-37	Fine sand, loamy fine sand.	SM, SP-SM, SP	A-3, A-2-4	100	100	80-100	3-20	0-14	NP
	37-45	Fine sand--------	SP, SP-SM	A-3, A-2-4	0	100	80-100	2-12	0-14	NP
	45-80	Fine sand, loamy fine sand.	SP, SP-SM	A-3, A-2-4	100	100	80-100	3-20	0-14	NP

See footnote at end of table.

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
71*:										
Boulogne--------	0-6	Fine sand--------	SP, SP-SM	A-3	100	100	85-100	3-10	---	NP
	6-16	Fine sand--------	SP-SM, SM, SP	A-3, A-2-4	100	100	85-100	3-20	---	NP
	16-31	Fine sand--------	SP-SM, SP	A-3	100	100	85-100	3-10	---	NP
	31-39	Fine sand, loamy fine sand.	SP-SM, SM	A-2-4	100	100	85-95	12-20	---	NP
	39-80	Sand, fine sand	SP-SM, SM	A-2-4	100	100	85-95	12-20	---	NP
72*:										
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---
Ortega----------	0-5	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	3-8	---	NP
	5-82	Fine sand--------	SP, SP-SM	A-3	100	100	90-100	2-7	---	NP
Kershaw---------	0-80	Fine sand--------	SP, SP-SM, SW	A-2, A-3	98-100	98-100	50-80	1-7	---	NP
73*:										
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---
Mascotte--------	0-5	Fine sand--------	SP-SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	5-15	Fine sand--------	SP-SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	15-25	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	8-15	---	NP
	25-28	Fine sandy loam, fine sand, loamy fine sand.	SP-SM	A-3, A-2-4	100	100	85-100	5-12	---	NP
	28-58	Sandy clay loam, fine sandy loam.	SC, SC-SM, SM	A-2, A-4, A-6	100	100	85-100	19-45	<38	NP-15
	58-80	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	85-100	8-15	---	NP
Sapelo----------	0-23	Fine sand--------	SM, SP, SP-SM	A-2, A-3	100	100	85-100	4-20	---	NP
	23-32	Fine sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	80-100	8-20	---	NP
	32-56	Fine sand--------	SM, SP, SP-SM	A-2, A-3	100	100	75-100	4-20	---	NP
	56-80	Fine sandy loam, sandy clay loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	100	80-100	20-50	<40	NP-20
74*:										
Pelham----------	0-21	Fine sand--------	SM, SP-SM	A-2	100	95-100	75-100	10-25	---	NP
	21-60	Sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	65-100	27-50	15-30	2-12
	60-80	Sandy clay loam, fine sandy loam, sandy clay.	SC, SM, ML, CL	A-2, A-4, A-6, A-7	100	95-100	65-100	27-65	20-45	3-20
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---
75*:										
Urban land------	0-6	Variable---------	---	---	---	---	---	---	---	---
Hurricane-------	0-5	Fine sand--------	SP, SP-SM	A-3	100	100	78-100	4-8	0-14	NP
	5-68	Fine sand--------	SP, SP-SM	A-3	100	100	78-100	4-8	0-14	NP
	68-80	Fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	0-14	NP

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
75*:										
Albany----------	0-50	Fine sand--------	SM, SP-SM	A-2	100	100	75-90	10-20	---	NP
	50-63	Fine sandy loam	SM	A-2	100	100	75-92	22-30	---	NP
	63-80	Sandy clay loam, fine sandy loam.	SC, SM, SC-SM	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-20
78--------------- Yonges	0-6	Fine sandy loam	SM, ML	A-2, A-4	100	100	90-100	25-55	15-30	NP-11
	6-65	Sandy clay loam, clay loam, sandy clay.	CL-ML, CL, SC, SC-SM	A-4, A-6, A-7	100	100	95-100	40-70	20-45	6-28
	65-80	Fine sandy loam, sandy clay loam.	CL, ML, SC, SM	A-4, A-6	100	100	80-100	40-65	20-42	3-22
79--------------- Yulee	0-14	Clay-------------	CL, CH	A-7	100	100	95-100	55-80	44-55	22-30
	14-66	Sandy clay loam	SC, CL	A-6, A-7	100	100	95-100	40-60	30-43	11-21
	66-80	Sandy clay loam, clay loam.	CL	A-6, A-7	100	100	95-100	52-80	32-48	13-25
80*:										
Goldhead--------	0-6	Fine sand--------	SP, SP-SM	A-3	100	100	90-99	2-6	---	NP
	6-31	Fine sand--------	SP, SP-SM	A-3	95-100	90-100	90-99	2-6	---	NP
	31-63	Fine sandy loam, sandy clay loam.	SM, SC-SM, SC	A-2-4, A-2-6	75-100	65-100	60-95	15-35	20-40	NP-25
	63-80	Variable---------	---	---	---	---	80-99	2-12	---	---
Lynn Haven------	0-13	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	---	---	NP
	13-21	Fine sand--------	SP, SP-SM, SM	A-3, A-2-4	100	100	80-100	2-14	---	NP
	21-62	Fine sand, loamy fine sand.	SM, SP-SM	A-3, A-2-4	100	100	80-100	5-20	---	NP
	62-80	Fine sand--------	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
81--------------- Stockade	0-12	Fine sandy loam	SM, ML	A-2-4, A-4	100	100	85-100	20-60	0-30	NP-10
	12-46	Sandy clay loam, fine sandy loam.	SC	A-4, A-6, A-2, A-3	100	100	90-100	2-45	0-40	NP-18
	46-65	Variable---------	---	---	---	---	---	---	---	---
82--------------- Pelham	0-21	Fine sand--------	SM, SP-SM	A-2	100	95-100	75-90	10-25	---	NP
	21-60	Sandy clay loam, fine sandy loam.	SM, SC, SC-SM	A-2, A-4, A-6	100	95-100	65-90	27-50	15-30	2-12
	60-80	Sandy clay loam, fine sandy loam, sandy clay.	SC, SM, ML, CL	A-2, A-4, A-6, A-7	100	95-100	65-90	27-65	15-45	3-20
86--------------- Yulee	0-14	Clay-------------	CL, CH	A-7	100	100	95-100	55-80	44-55	22-30
	14-66	Sandy clay loam	SC, CL	A-6, A-7	100	100	95-100	40-60	30-43	11-21
	66-80	Sandy clay loam, clay loam.	CL	A-6, A-7	100	100	95-100	52-80	32-48	13-25
87--------------- Dorovan	0-12	Muck-------------	PT	---	---	---	---	---	---	---
	12-30	Muck-------------	PT	---	---	---	---	---	---	---
	30-80	Fine sand, loamy fine sand.	SP-SM, SC-SM, SM	A-1, A-3, A-4, A-2-4	100	100	5-70	5-49	<20	NP-7

See footnote at end of table.

Table 15.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In								Pct	
88--------------- Lynchburg	0-14	Fine sand--------	SM	A-2	100	100	80-100	2-12	0-14	NP
	14-38	Sandy clay loam, sandy clay, clay.	SC-SM, SC, CL-ML, CL	A-2, A-4, A-6	92-100	90-100	70-100	25-67	15-40	4-18
	38-80	Sandy clay loam	SC-SM, SC, CL, CL-ML	A-2, A-4, A-6	95-100	92-100	70-100	25-73	15-40	4-20

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.—Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
2---------------- Albany	0-50	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	<2	Low--------	0.10	5	1	1-3
	50-63	1-20	1.50-1.70	0.6-2.0	0.08-0.10	3.6-6.5	<2	Low--------	0.20			
	63-80	13-35	1.55-1.65	0.2-2.0	0.10-0.16	3.6-6.5	<2	Low--------	0.24			
6---------------- Aquic Quartzipsam- ments	0-80	1-3	1.50-1.65	6.0-2.0	0.03-0.05	4.5-7.3	<2	Low--------	0.10	5	2	<.5
7---------------- Arents	0-80											
9---------------- Arents	0-24	2-8	1.45-1.65	2.0-20	0.02-0.08	4.5-7.8	<2	Low--------	0.17	5	2	<3
	24-80											
10*-------------- Beaches	0-6	0-1	1.35-1.85	6.0-20	0.03-0.05	5.1-7.8	4-32	Low--------	0.05	5	1	0-.1
	6-80	0-1	1.35-1.85	6.0-20	0.03-0.05	5.1-7.8	4-32	Low--------	0.05			
12--------------- Blanton	0-54	1-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Low--------	0.10	5	1	.5-3
	54-80	12-40	1.60-1.70	0.2-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
14--------------- Boulogne	0-6	1-7	1.30-1.55	6.0-20	0.10-0.15	3.6-6.0	<2	Low--------	0.10	5	1	1-5
	6-16	1-8	1.50-1.65	2.0-6.0	0.10-0.15	3.6-6.0	<2	Low--------	0.20			
	16-31	1-4	1.50-1.70	6.0-20	0.05-0.10	3.6-6.0	<2	Low--------	0.10			
	31-39	1-12	1.50-1.70	0.2-2.0	0.10-0.25	3.6-6.0	<2	Low--------	0.24			
	39-80	1-12	1.40-1.70	0.06-0.2	0.10-0.20	3.6-6.0	<2	Low--------	0.20			
18--------------- Corolla	0-80	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	0	Low--------	0.10	5	1	0-.5
19--------------- Cornelia	0-39	1-15	1.30-1.55	6.0->20	0.02-0.05	3.6-5.5	<2	Low--------	0.10	5	2	0-6
	39-80	1-15	1.45-1.60	6.0->20	0.05-0.10	3.6-5.5	<2	Low--------	0.17			
22*:												
Evergreen--------	0-11	---	0.20-0.40	>20	0.25-0.40	3.6-5.5	<2	Low--------	----	5	8	60-90
	11-26	1-8	1.40-1.70	6.0-20	0.10-0.20	3.6-5.5	<2	Low--------	0.10			
	26-80	1-5	1.50-1.65	0.2-20	0.10-0.25	3.6-5.5	<2	Low--------	0.10			
Wesconnett-------	0-2	2-7	1.10-1.30	6.0-20	0.15-0.30	3.6-6.5	<2	Low--------	0.10	5	8	10-20
	2-32	3-8	1.30-1.55	0.6-6.0	0.10-0.15	3.6-6.5	<2	Low--------	0.15			
	32-44	2-7	1.35-1.50	6.0-20	0.05-0.08	3.6-6.5	<2	Low--------	0.10			
	44-80	2-8	1.40-1.65	0.2-6.0	0.10-0.15	3.6-6.5	<2	Low--------	0.15			
23*:												
Fripp------------	0-6	0-5	1.30-1.70	6.0->20	0.02-0.08	5.1-7.8	<2	Low--------	0.10	5	1	<1
	6-80	0-5	1.30-1.70	6.0->20	0.01-0.03	5.6-7.8	<2	Low--------	0.10			
Corolla----------	0-80	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	0	Low--------	0.10	5	1	0-.5
24*:												
Hurricane--------	0-5	1-4	1.40-1.60	6.0-20	0.03-0.07	3.6-6.0	0	Low--------	0.10	5	2	.5-2
	5-68	1-4	1.40-1.60	6.0-20	0.03-0.07	3.6-6.0	0	Low--------	0.10			
	68-77	2-8	1.55-1.65	2.0-20	0.10-0.15	3.6-6.0	0	Low--------	0.15			
	77-80	1-4	1.40-1.60	2.0-20	0.03-0.10	3.6-6.0	0	Low--------	0.10			

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
24*:												
Ridgewood-------	0-7	1-3	1.35-1.55	6.0-20	0.05-0.10	4.5-7.3	<2	Low-------	0.10	5	1	0-2
	7-80	0-5	1.35-1.65	6.0-20	0.03-0.08	4.5-7.3	<2	Low-------	0.10			
25, 26----------- Kershaw	0-80	1-5	1.35-1.60	>20	0.02-0.05	4.5-6.0	<2	Low-------	0.10	5	1	0-2
29, 31----------- Kureb	0-82	0-3	1.60-1.80	6.0-20	<0.05	3.5-7.3	<2	Low-------	0.10	5	1	0-3
32--------------- Leon	0-5	1-5	1.30-1.45	6.0-20	0.05-0.15	3.5-6.5	0-2	Low-------	0.10	5	1	.5-4
	5-18	0-3	1.40-1.60	6.0-20	0.02-0.05	3.5-6.5	0-2	Low-------	0.10			
	18-37	2-8	1.25-1.65	0.6-6.0	0.15-0.30	3.5-6.5	0-2	Low-------	0.15			
	37-45	1-4	1.50-1.65	2.0-20	0.05-0.10	3.5-6.5	0-2	Low-------	0.10			
	45-80	2-8	1.25-1.65	0.06-2.0	0.15-0.30	3.5-6.5	0-2	Low-------	0.15			
33--------------- Leon	0-18	1-3	1.40-1.55	2.0-6.0	0.05-0.10	4.5-8.4	8-16	Low-------	0.10	5	8	1-3
	18-45	2-8	1.40-1.60	0.6-6.0	0.10-0.15	4.5-8.4	8-16	Low-------	0.15			
	45-80	2-10	1.55-1.80	0.06-6.0	0.05-0.15	4.5-8.4	2-8	Low-------	0.10			
35--------------- Lynn Haven	0-13	1-6	1.30-1.45	6.0-20	0.05-0.15	3.6-5.5	<2	Low-------	0.10	5	1	1-4
	13-21	0-3	1.30-1.60	6.0-20	0.05-0.10	3.6-5.5	<2	Low-------	0.10			
	21-62	2-8	1.40-1.55	0.6-6.0	0.15-0.30	3.6-5.5	<2	Low-------	0.15			
	62-80	1-4	1.50-1.65	2.0-20	0.01-0.05	3.6-5.5	<2	Low-------	0.10			
36--------------- Mandarin	0-26	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-6.0	<2	Low-------	0.10	5	2	<3
	26-40	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-6.0	<2	Low-------	0.15			
	40-73	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-7.3	<2	Low-------	0.10			
	73-80	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-7.3	<2	Low-------	0.15			
38--------------- Mascotte	0-5	0-5	1.20-1.50	6.0-20	0.05-0.15	3.6-5.5	<2	Low-------	0.10	5	1	2-12
	5-15	0-5	1.35-1.55	6.0-20	0.03-0.08	3.6-5.5	<2	Low-------	0.10			
	15-25	3-10	1.35-1.50	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
	25-28	1-8	1.45-1.70	6.0-20	0.03-0.08	3.6-5.5	<2	Low-------	0.15			
	28-58	14-35	1.55-1.79	0.2-0.6	0.10-0.15	3.6-5.5	<2	Low-------	0.24			
	58-80	5-13	1.45-1.60	0.6-2.0	0.07-0.10	3.6-6.0	<2	Low-------	0.10			
40--------------- Maurepas	0-80	---	0.05-0.25	6.0-20.0	0.20-0.50	5.6-8.4	<4	Low-------	----	3	---	---
42*:												
Newhan----------	0-80	0	1.60-1.75	6.0->20	<0.05	3.5-7.8	4-16	Low-------	0.10	5	1	0-.5
Corolla---------	0-80	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	0	Low-------	0.10	5	1	0-.5
44*:												
Mascotte--------	0-5	0-5	1.20-1.50	6.0-20	0.05-0.15	3.6-5.5	<2	Low-------	0.10	5	1	2-7
	5-15	0-5	1.35-1.55	6.0-20	0.03-0.08	3.6-5.5	<2	Low-------	0.10			
	15-25	3-10	1.35-1.50	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
	25-28	1-8	1.45-1.70	6.0-20	0.03-0.08	3.6-5.5	<2	Low-------	0.15			
	28-58	14-35	1.55-1.79	0.2-0.6	0.10-0.15	3.6-5.5	<2	Low-------	0.24			
	58-80	5-13	1.45-1.60	0.6-2.0	0.07-0.10	3.6-5.5	<2	Low-------	0.10			
Pelham----------	0-21	1-8	1.50-1.70	6.0-20	0.04-0.07	3.6-5.5	<2	Low-------	0.10	5	1	1-2
	21-60	15-30	1.30-1.60	0.6-2.0	0.10-0.13	3.6-5.5	<2	Low-------	0.24			
	60-80	15-40	1.30-1.60	0.2-2.0	0.10-0.16	3.6-5.5	<2	Low-------	0.24			
46--------------- Ortega	0-5	1-3	1.20-1.45	6.0-20	0.05-0.08	3.6-6.5	<2	Low-------	0.10	5	2	1-2
	5-82	1-3	1.35-1.60	6.0-20	0.03-0.06	3.6-6.5	<2	Low-------	0.10			

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
49---------------- Pamlico	0-35	---	0.20-0.65	0.6-6.0	0.24-0.40	3.5-5.5	<2	Low--------	----	---	2	20-80
	35-80	5-10	1.60-1.75	6.0-20	0.02-0.10	3.5-5.5	<2	Low--------	0.10			
50---------------- Pamlico	0-35	---	0.20-0.65	0.6-6.0	0.24-0.40	3.5-5.5	<2	Low--------	----	2	2	20-80
	35-80	5-10	1.60-1.75	6.0-20	0.10-0.20	3.5-5.5	<2	Low--------	0.10			
51---------------- Pelham	0-21	1-8	1.50-1.70	6.0-20	0.04-0.07	3.6-5.5	<2	Low--------	0.10	5	1	1-5
	21-60	15-30	1.30-1.60	0.6-2.0	0.10-0.13	3.6-5.5	<2	Low--------	0.24			
	60-80	15-40	1.30-1.60	0.2-2.0	0.10-0.16	3.6-5.5	<2	Low--------	0.24			
53---------------- Penney	0-5	0-3	1.30-1.55	6.0->20	0.04-0.08	3.6-6.0	<2	Low--------	0.10	5	2	0-2
	5-48	0-3	1.35-1.65	6.0-20	0.02-0.06	3.6-6.0	<2	Low--------	0.10			
	48-80	2-6	1.50-1.65	6.0-20	0.05-0.08	3.6-6.0	<2	Low--------	0.10			
55*--------------- Pits	0-80	---	---	---	---	---	<2	-----------	----	---	8	---
56---------------- Pottsburg	0-3	1-4	1.20-1.45	6.0-20	0.05-0.15	3.6-6.5	<2	Low--------	0.10	5	1	.5-3
	3-57	0-4	1.40-1.70	6.0-20	0.03-0.10	3.6-6.5	<2	Low--------	0.10			
	57-80	1-6	1.55-1.70	0.6-2.0	0.10-0.25	3.6-6.0	<2	Low--------	0.15			
58---------------- Pottsburg	0-3	0-4	1.20-1.45	6.0-20	0.05-0.10	3.6-6.5	<2	Low--------	0.10	5	1	.5-3
	3-57	0-5	1.30-1.65	6.0-20	0.03-0.08	3.6-6.5	<2	Low--------	0.10			
	57-80	1-6	1.55-1.70	0.6-2.0	0.10-0.25	3.6-6.0	<2	Low--------	0.15			
62---------------- Rutlege	0-10	2-10	1.15-1.30	6.0-20	0.20-0.25	3.6-5.5	<2	Low--------	0.10	5	8	10-20
	10-80	2-10	1.50-1.70	6.0-20	0.04-0.08	3.6-5.5	<2	Low--------	0.17			
63---------------- Sapelo	0-23	2-5	1.40-1.65	6.0-20	0.03-0.07	3.6-5.5	<2	Low--------	0.10	5	1	1-5
	23-32	3-7	1.35-1.60	0.6-2.0	0.10-0.15	3.6-6.5	<2	Low--------	0.15			
	32-56	3-6	1.50-1.70	6.0-20	0.03-0.07	3.6-5.5	<2	Low--------	0.17			
	56-80	10-30	1.55-1.75	0.2-2.0	0.12-0.17	3.6-5.5	<2	Low--------	0.24			
66---------------- Surrency	0-14	2-8	0.80-1.25	6.0-20	0.15-0.30	3.6-5.5	0	Low--------	0.10	5	8	4-20
	14-26	0-10	1.50-1.65	2.0-20	0.05-0.10	3.6-5.5	0	Low--------	0.10			
	26-70	10-23	1.60-1.85	0.2-2.0	0.06-0.10	3.6-5.5	0	Low--------	0.15			
	70-80	22-35	1.65-1.85	0.2-2.0	0.10-0.15	3.6-5.5	0	Low--------	0.15			
67---------------- Surrency	0-14	2-8	0.80-1.25	6.0-20	0.15-0.30	3.6-5.0	0	Low--------	0.10	5	8	4-20
	14-26	0-10	1.50-1.65	2.0-20	0.05-0.10	3.6-5.0	0	Low--------	0.10			
	26-70	10-23	1.60-1.85	0.2-2.0	0.06-0.10	3.6-5.5	0	Low--------	0.15			
	70-80	22-35	1.65-1.85	0.2-2.0	0.10-0.15	3.6-5.5	0	Low--------	0.15			
68---------------- Tisonia	0-18	0	0.20-0.50	6.0-20	0.25-0.35	6.1-7.8	16-32	Low--------	----	2	2	40-65
	18-65	60-85	1.05-1.40	0.00-0.06	0.15-0.20	6.1-7.8	16-32	High-------	0.20			
69*--------------- Urban land	0-6	---	---	---	---	---	<2	-----------	----	---	---	---
71*:												
Urban land-------	0-6	---	---	---	---	---	<2	-----------	----	---	---	---
Leon-------------	0-5	1-5	1.30-1.45	6.0-20	0.05-0.15	3.5-6.5	0-2	Low--------	0.10	5	1	.5-4
	5-18	0-3	1.40-1.60	6.0-20	0.02-0.05	3.5-6.5	0-2	Low--------	0.10			
	18-37	2-8	1.25-1.65	0.6-6.0	0.15-0.30	3.5-6.5	0-2	Low--------	0.15			
	37-45	1-4	1.50-1.65	2.0-20	0.05-0.10	3.5-6.5	0-2	Low--------	0.10			
	45-80	2-8	1.25-1.65	0.2-2.0	0.15-0.30	3.5-6.5	0-2	Low--------	0.15			

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
71*:												
Boulogne--------	0-6	1-7	1.30-1.55	6.0-20	0.10-0.15	3.6-6.0	<2	Low-------	0.10	5	1	1-5
	6-16	1-8	1.50-1.65	2.0-6.0	0.10-0.15	3.6-6.0	<2	Low-------	0.20			
	16-31	1-4	1.50-1.70	6.0-20	0.05-0.10	3.6-6.0	<2	Low-------	0.10			
	31-39	1-12	1.50-1.70	0.6-2.0	0.10-0.25	3.6-6.0	<2	Low-------	0.24			
	39-80	1-12	1.40-1.70	0.06-0.2	0.10-0.20	3.6-6.0	<2	Low-------	0.20			
72*:												
Urban land------	0-6	---	---	---	---	---	<2	----------	----	---	---	---
Ortega----------	0-5	1-3	1.20-1.45	6.0-20	0.05-0.08	3.6-6.5	<2	Low-------	0.10	5	2	1-2
	5-82	1-3	1.35-1.60	6.0-20	0.03-0.06	3.6-6.5	<2	Low-------	0.10			
Kershaw---------	0-80	1-5	1.35-1.60	>20	0.02-0.05	4.5-6.0	<2	Low-------	0.10	5	1	<1
73*:												
Urban land------	0-6	---	---	---	---	---	<2	----------	----	---	---	---
Mascotte--------	0-5	0-5	1.20-1.50	6.0-20	0.05-0.15	3.6-5.5	<2	Low-------	0.10	5	1	2-7
	5-15	0-5	1.35-1.55	6.0-20	0.03-0.08	3.6-5.5	<2	Low-------	0.10			
	15-25	3-10	1.35-1.50	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
	25-28	1-8	1.45-1.70	6.0-20	0.03-0.08	3.6-5.5	<2	Low-------	0.15			
	28-58	14-35	1.55-1.79	0.2-0.6	0.10-0.15	3.6-5.5	<2	Low-------	0.24			
	58-80	5-13	1.45-1.60	0.6-2.0	0.07-0.10	3.6-5.5	<2	Low-------	0.10			
Sapelo----------	0-23	2-5	1.40-1.65	6.0-20	0.03-0.07	3.6-5.5	<2	Low-------	0.10	5	1	1-3
	23-32	3-7	1.35-1.60	0.6-2.0	0.10-0.15	3.6-5.5	<2	Low-------	0.15			
	32-56	3-6	1.50-1.70	6.0-20	0.03-0.07	3.6-5.5	<2	Low-------	0.17			
	56-80	10-30	1.55-1.75	0.2-2.0	0.12-0.17	3.6-5.5	<2	Low-------	0.24			
74*:												
Pelham----------	0-21	1-8	1.50-1.70	6.0-20	0.04-0.07	3.6-5.5	<2	Low-------	0.10	5	1	1-2
	21-60	15-30	1.30-1.60	0.6-2.0	0.10-0.13	3.6-5.5	<2	Low-------	0.24			
	60-80	15-40	1.30-1.60	0.2-2.0	0.10-0.16	3.6-5.5	<2	Low-------	0.24			
Urban land------	0-6	---	---	---	---	---	<2	----------	----	---	---	---
75*:												
Urban land------	0-6	---	---	---	---	---	<2	----------	----	---	---	---
Hurricane-------	0-5	1-4	1.40-1.60	6.0-20	0.03-0.07	3.6-6.0	0	Low-------	0.10	5	2	.5-2
	5-68	1-4	1.40-1.60	6.0-20	0.03-0.07	3.6-6.0	0	Low-------	0.10			
	68-80	2-8	1.55-1.65	2.0-6.0	0.10-0.15	3.6-6.0	0	Low-------	0.15			
Albany----------	0-50	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	<2	Low-------	0.10	5	1	1-2
	50-63	1-20	1.50-1.70	2.0-6.0	0.08-0.10	4.5-6.0	<2	Low-------	0.20			
	63-80	13-35	1.55-1.65	0.2-2.0	0.10-0.16	4.5-6.0	<2	Low-------	0.24			
78--------------- Yonges	0-6	5-18	1.40-1.60	0.6-6.0	0.09-0.14	5.1-7.8	<2	Low-------	0.15	5	2	1-5
	6-65	18-40	1.30-1.60	0.2-0.6	0.13-0.18	5.1-8.4	<2	Low-------	0.17			
	65-80	10-35	1.30-1.50	0.6-2.0	0.12-0.16	6.1-8.4	<2	Low-------	0.20			
79--------------- Yulee	0-14	35-45	1.20-1.40	0.00-0.2	0.15-0.20	5.1-8.4	0	Moderate	0.28	5	4	1-5
	14-66	20-35	1.50-1.65	0.00-0.2	0.12-0.17	5.6-8.4	0	Low-------	0.32			
	66-80	25-35	1.50-1.65	0.06-2.0	0.12-0.17	5.6-8.4	0	Low-------	0.32			

See footnote at end of table.

Table 16.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
80*:												
Goldhead--------	0-6	1-5	1.30-1.50	6.0-20	0.05-0.15	4.5-5.5	<2	Low-------	0.10	5	2	1-4
	6-31	1-5	1.35-1.50	6.0-20	0.02-0.05	4.5-5.5	<2	Low-------	0.10			
	31-63	13-34	1.45-1.65	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low-------	0.24			
	63-80	---	---	2.0-20.0	---	---	---	----------	----			
Lynn Haven------	0-13	1-6	1.30-1.45	6.0-20	0.05-0.15	3.6-5.5	<2	Low-------	0.10	5	1	1-4
	13-21	0-3	1.30-1.60	6.0-20	0.05-0.10	3.6-5.5	<2	Low-------	0.10			
	21-62	2-8	1.40-1.55	0.6-6.0	0.15-0.30	3.6-5.5	<2	Low-------	0.15			
	62-80	1-4	1.50-1.65	2.0-20	0.01-0.05	3.6-5.5	<2	Low-------	0.10			
81---------------	0-12	10-15	1.40-1.70	0.6-2.0	0.15-0.20	4.5-6.5	0	Low-------	0.20	5	3	3-6
Stockade	12-46	18-30	1.40-1.70	0.06-0.6	0.12-0.17	4.5-8.4	0	Low-------	0.28			
	46-65	---	---	2.0-20	---	---	---	----------	----			
82---------------	0-21	1-8	1.50-1.70	6.0-20	0.04-0.07	3.6-5.5	<2	Low-------	0.10	5	8	1-2
Pelham	21-60	15-30	1.30-1.60	0.6-2.0	0.10-0.13	3.6-5.5	<2	Low-------	0.24			
	60-80	15-40	1.30-1.60	0.2-2.0	0.10-0.16	3.6-5.5	<2	Low-------	0.24			
86---------------	0-14	35-45	1.20-1.40	0.00-0.2	0.15-0.20	5.1-7.8	<2	Moderate	0.28	5	4	2-10
Yulee	14-66	20-35	1.50-1.65	0.00-0.2	0.12-0.17	5.6-7.8	<2	----------	0.32			
	66-80	25-35	1.50-1.65	0.06-2.0	0.12-0.17	5.6-7.8	<2	----------	0.32			
87---------------	0-12	---	0.25-0.40	0.6-2.0	0.20-0.25	3.6-4.4	<2	----------	----	3	2	20-80
Dórovan	12-30	---	0.35-0.55	0.6-2.0	0.20-0.25	3.6-4.4	<2	----------	----			
	30-80	5-20	1.40-1.65	6.0-20	0.05-0.08	4.5-5.5	<2	Low-------	----			
88---------------	0-14	1-5	1.30-1.45	6.0-20	0.05-0.15	3.5-6.0	0	Low-------	0.10	5	1	.5-5
Lynchburg	14-38	18-45	1.30-1.50	0.6-2.0	0.12-0.16	3.6-5.5	0	Low-------	0.20			
	38-80	20-35	1.30-1.45	0.6-2.0	0.12-0.18	3.6-5.5	---	Low-------	0.20			

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.—Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," and "apparent" are explained in the text. T
less than; > means more than. Absence of an entry indicates that the feature is not a concern or that d
estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Cemented pan		Subsidenc	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Thick-ness	Ini-tial	Tota
					Ft			In		In	In
2—Albany	C	None	---	---	1.0-2.5	Apparent	Jan-Oct	---	---	---	---
6—Aquic Quartzipsamments	A	None	---	---	1.5-6.0	Apparent	Jan-Oct	---	---	---	---
7—Arents	C	None	---	---	1.5-3.0	Apparent	Jan-Oct	---	---	---	---
9—Arents	B	None	---	---	2.0-4.0	Apparent	Jan-Oct	---	---	5-10	12-3
10*—Beaches	D	Frequent	Very brief	Jan-Dec	0-6.0	Apparent	Jan-Dec	---	---	---	---
12—Blanton	A	None	---	---	3.5-6.0	Apparent	Jan-Oct	---	---	---	---
14—Boulogne	B/D	None	---	---	0.5-1.5	Apparent	Jan-Oct	60	Thick	---	---
18—Corolla	D	Rare	---	---	1.5-3.5	Apparent	Jan-Oct	---	---	---	---
19—Cornelia	A	None	---	---	>6.0	---	---	---	---	---	---
22*:											
Evergreen	D	None	---	---	+2-0	Apparent	Jan-Dec	---	---	2-6	8-1
Wesconnett	D	None	---	---	+2-0	Apparent	Jan-Dec	---	---	---	---
23*:											
Fripp	A	None	---	---	>6.0	---	---	---	---	---	---
Corolla	D	Rare	---	---	1.5-3.0	Apparent	Jan-Oct	---	---	---	---
24*:											
Hurricane	C	None	---	---	2.0-3.5	Apparent	Jan-Oct	---	---	---	---
Ridgewood	C	None	---	---	2.0-3.5	Apparent	Jan-Oct	---	---	---	---

See footnote at end of table.

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Cemented pan		Subsidenc	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Thick-ness	Ini-tial	Tota
					Ft			In		In	In
25, 26----------- Kershaw	A	None--------	---	---	>6.0	---	---	---	---	---	---
29, 31----------- Kureb	A	None--------	---	---	>6.0	---	---	---	---	---	---
32--------------- Leon	B/D	None--------	---	---	0.5-1.5	Apparent	Jan-Oct	66	Thick	---	---
33--------------- Leon	D	Very frequent.	Very brief	Jan-Dec	0-0.5	Apparent	Jan-Dec	---	---	---	---
35--------------- Lynn Haven	B/D	None--------	---	---	0-0.5	Apparent	Jan-Oct	---	---	---	---
36--------------- Mandarin	C	None--------	---	---	1.5-3.5	Apparent	Jan-Oct	---	---	---	---
38--------------- Mascotte	B/D	None--------	---	---	0.5-1.5	Apparent	Jan-Oct	---	---	---	---
40--------------- Maurepas	D	Frequent----	Brief	Jan-Dec	0-0.5	Apparent	Jan-Dec	---	---	15-30	>51
42*:											
Newhan-----------	A	None--------	---	---	>6.0	---	---	---	---	---	---
Corolla----------	D	Rare--------	---	---	1.5-3.0	Apparent	Jan-Oct	---	---	---	---
44*:											
Mascotte---------	B/D	None--------	---	---	0.5-1.5	Apparent	Jan-Oct	---	---	---	---
Pelham-----------	B/D	None--------	---	---	0-1.0	Apparent	Jan-Oct	---	---	---	---
46--------------- Ortega	A	None--------	---	---	3.5-6.0	Apparent	Jan-Oct	---	---	---	---
49--------------- Pamlico	D	None--------	---	---	+2-0	Apparent	Jan-Dec	---	---	4-20	10-3
50--------------- Pamlico	D	Frequent----	Brief	Jan-Oct	0-0.5	Apparent	Jan-Dec	---	---	4-12	10-2
51--------------- Pelham	B/D	None--------	---	---	0-1.0	Apparent	Jan-Oct	---	---	---	---

See footnote at end of table.

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Cemented pan		Subsidenc	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Thick-ness	Ini-tial	Tota
					Ft			In		In	In
53: Penney	A	None	---	---	>6.0	---	---	---	---	---	---
55*: Pits	D	None	---	---	0-1.0	---	---	---	---	---	---
56: Pottsburg	B/D	None	---	---	0.5-1.0	Apparent	Jan-Oct	---	---	---	---
58: Pottsburg	C	None	---	---	1.0-2.0	Apparent	Jan-Oct	---	---	---	---
62: Rutlege	B/D	Frequent	Brief	Dec-May	0-0.5	Apparent	Jan-Dec	---	---	---	---
63: Sapelo	D	None	---	---	0.5-1.5	Apparent	Jan-Oct	---	---	---	---
66: Surrency	D	None	---	---	+2-0	Apparent	Jan-Dec	---	---	0-0	---
67: Surrency	D	Frequent	Brief	Dec-Mar	0-0.5	Apparent	Jan-Dec	---	---	0-0	---
68: Tisonia	D	Very frequent.	Very brief	Jan-Dec	0-0.5	Apparent	Jan-Dec	---	---	16-18	16-2
69*. Urban land											
71*: Urban land.											
Leon	B/D	None	---	---	0.5-1.5	Apparent	Jan-Oct	66	Thick	---	---
Boulogne	B/D	None	---	---	0.5-1.5	Apparent	Jan-Oct	60	Thick	---	---
72*: Urban land.											
Ortega	A	None	---	---	3.5-6.0	Apparent	Jan-Oct	---	---	---	---
Kershaw	A	None	---	---	>6.0	---	---	---	---	---	---
73*: Urban land.											

See footnote at end of table.

Table 17.—Soil and Water Features—Continued

Soil name and map symbol	Hydro- logic group	Flooding			High water table			Cemented pan		Subsidenc	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Thick- ness	Ini- tial	Tota
					Ft			In		In	In
73*:											
Mascotte	B/D	None	---	---	0.5-1.5	Apparent	Jan-Oct	---	---	---	--
Sapelo	D	None	---	---	0.5-1.5	Apparent	Jan-Oct	---	---	---	--
74*:											
Pelham	B/D	None	---	---	0-1.0	Apparent	Jan-Oct	---	---	---	--
Urban land.											
75*:											
Urban land.											
Hurricane	C	None	---	---	2.0-3.5	Apparent	Jan_Oct	---	---	0-0	--
Albany	C	None	---	---	1.0-2.5	Apparent	Jan-Oct	---	---	---	--
78 Yonges	D	None	---	---	0-1.0	Apparent	Jan_Oct	---	---	---	--
79 Yulee	D	Frequent	Long	Jun-Mar	0-0.5	Apparent	Jan-Dec	---	---	0-0	--
80*:											
Goldhead	B/D	None	---	---	0-0.5	Apparent	Jan-Oct	---	---	---	--
Lynn Haven	B/D	None	---	---	0-0.5	Apparent	Jan-Oct	---	---	---	--
81 Stockade	B/D	None	---	---	+2-0	Apparent	Jan-Dec	---	---	0-0	--
82 Pelham	B/D	None	---	---	+1-0	Apparent	Jan-Dec	---	---	---	--
86 Yulee	D	None	---	---	+2-0	Apparent	Jan-Dec	---	---	---	--
87 Dorovan	D	None	---	---	+2-0	Apparent	Jan-Dec	---	---	6-12	51-
88 Lynchburg	C	None	---	---	0.5-1.5	Apparent	Jan-Oct	---	---	0-0	--

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 18.--Physical Analysis of Selected Soils

(Dashes indicate that material was not detected or data were not determined)

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk densit (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Albany:[1]												
S16-10-1	0-3	A	0.0	0.1	0.3	68.1	21.4	89.9	7.3	2.8	---	---
-2	3-15	E1	0.0	0.0	0.2	69.3	22.3	91.8	5.7	2.5	---	---
-3	15-29	E2	0.0	0.0	0.2	69.7	22.1	92.0	5.4	2.6	---	---
-4	29-39	Eg1	0.0	0.0	0.3	75.7	17.5	93.5	4.6	1.9	---	---
-5	39-50	Eg2	0.0	0.0	0.2	75.0	17.7	92.9	4.8	2.3	---	---
-6	50-63	Bt	0.0	0.1	0.2	59.9	15.0	75.2	5.1	19.7	---	---
-7	63-88	Btg	0.0	0.1	0.4	39.3	21.0	60.8	7.5	31.7	---	---
Blanton:[1]												
S16-14-1	0-3	A	0.0	0.0	1.9	81.8	5.1	88.8	8.6	2.6	---	---
-2	3-9	E1	0.0	0.0	2.2	83.1	4.8	90.1	6.6	3.3	---	---
-3	9-21	E2	0.0	0.0	2.2	83.7	5.1	91.0	6.4	2.6	---	---
-4	21-36	E3	0.0	0.1	2.2	87.0	4.8	94.1	4.2	1.7	---	---
-5	36-54	E4	0.0	0.1	2.4	85.2	5.4	93.1	4.0	2.9	---	---
-6	54-65	Bt1	0.0	0.2	1.7	69.9	3.0	74.8	5.6	19.6	---	---
-7	65-80	Bt2	0.0	0.8	4.0	68.7	3.3	76.8	4.0	19.2	---	---
Boulogne:[1]												
S16-5-1	0-6	A	0.0	0.1	2.4	85.1	4.4	92.0	5.0	3.0	34.2	1.18
-2	6-16	Bh	0.0	0.1	2.5	83.1	4.4	90.2	4.2	5.6	14.8	1.32
-3	16-31	E	0.0	0.1	2.3	86.6	4.4	93.4	3.1	3.5	17.1	1.54
-4	31-39	B'h1	0.0	0.1	2.1	88.7	3.4	94.3	2.3	3.4	1.3	1.50
-5	39-80	B'h2	0.0	0.2	2.9	89.5	1.9	94.5	2.7	2.8	2.7	1.52
Cornelia:[1]												
S16-24-1	0-7	A	0.0	0.1	2.4	84.8	3.4	90.7	6.4	2.9	60.5	0.97
-2	7-13	E1	0.0	0.1	2.6	90.5	3.2	96.4	2.4	1.2	47.3	1.29
-3	13-39	E2	0.0	0.1	2.6	91.9	3.3	97.9	1.5	0.6	45.7	1.41
-4	39-44	Bh1	0.0	0.1	2.4	81.0	3.3	86.8	3.3	9.9	33.9	1.21
-5	44-53	Bh2	0.0	0.1	2.1	88.1	3.0	93.3	2.3	4.4	46.7	1.37
-6	53-73	Bh3	0.0	0.1	2.4	90.4	3.1	96.0	1.4	2.6	46.3	1.42
-7	73-92	Bh4	0.0	0.1	2.4	91.4	3.2	97.1	1.2	1.7	56.5	1.36
-8	92-106	Bh5	0.0	0.1	2.2	92.2	2.7	97.2	1.4	1.4	59.8	1.42

See footnotes at end of table.

Table 18.—Physical Analysis of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk density (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Corolla:[2]												
S45-20-1	0-6	A	0.0	0.6	9.6	87.4	2.1	99.7	0.1	0.2	76.3	1.48
-2	6-12	C1	0.0	1.3	13.5	82.6	2.0	99.4	0.2	0.4	76.3	1.50
-3	12-20	C2	0.1	2.4	8.1	84.7	3.9	99.2	0.4	0.4	57.2	1.46
-4	20-26	C3	1.5	18.0	43.8	35.0	0.5	98.8	0.3	0.9	82.8	1.48
-5	26-41	C4	0.6	11.7	47.2	39.5	0.4	99.4	0.1	0.5	101.0	1.51
-6	41-80	C5	2.4	19.6	46.3	30.3	0.4	99.0	0.5	0.5	92.7	1.48
Evergreen:[2]												
S45-14-2	3-11	Oa	---	---	---	---	---	---	---	---	91.4	0.34
-3	11-14	A1	0.0	0.0	2.2	76.5	3.9	82.6	9.7	7.7	4.8	1.57
-4	14-17	A2	0.0	0.0	2.6	85.2	3.3	91.1	4.3	4.6	34.2	1.32
-5	17-26	E	0.0	0.0	2.4	90.0	3.7	96.1	2.8	1.1	13.6	1.55
-6	26-54	Bh1	0.0	0.0	2.1	87.6	3.8	93.5	1.9	4.6	0.9	1.55
-7	54-80	Bh2	0.0	0.0	2.9	91.7	3.7	98.3	0.8	0.9	23.3	1.52
Fripp:[1]												
S16-19-1	0-6	A	0.0	0.1	3.3	88.9	5.4	97.7	2.1	0.2	91.4	1.11
-2	6-30	C1	0.0	0.0	0.8	95.0	1.3	97.1	2.9	0.0	57.2	1.37
-3	30-54	C2	0.0	0.0	1.0	94.9	2.5	98.4	1.6	0.0	91.4	1.38
-4	54-78	C3	0.0	0.0	0.5	88.1	11.0	99.6	0.4	0.0	44.7	1.49
-5	78-90	C3	0.0	0.0	1.0	83.4	15.2	99.6	0.4	0.0	---	---
Hurricane:[2]												
S45-11-1	0-5	Ap	0.0	0.2	4.3	89.8	2.3	96.6	1.4	2.0	30.6	1.40
-2	5-10	E1	0.0	0.2	4.4	88.1	3.4	96.1	2.2	1.7	24.7	1.44
-3	10-20	E2	0.0	0.2	4.6	88.4	3.2	96.4	1.6	2.0	30.3	1.45
-4	20-39	E3	0.0	0.2	4.4	88.9	3.4	96.9	1.3	1.8	42.7	1.44
-5	39-68	E4	0.0	0.1	3.6	92.1	3.0	98.8	0.2	1.0	36.8	1.47
-6	68-77	Bh1	0.0	0.0	2.2	94.5	2.5	99.2	0.1	0.7	31.6	1.47
-7	77-80	Bh2	0.0	0.2	3.3	90.4	4.4	98.3	0.7	1.0	18.4	1.50
Kershaw:[1]												
S16-7-1	0-3	A	0.0	0.0	1.0	92.1	3.0	96.1	1.7	2.2	---	---
-2	3-25	C1	0.0	0.0	0.8	93.0	3.1	96.9	1.2	1.9	55.9	1.51
-3	25-51	C1	0.0	0.0	0.9	93.7	2.9	97.5	0.5	2.0	62.9	1.52
-4	51-80	C2	0.0	0.0	0.9	93.4	3.1	97.4	0.5	2.1	51.1	1.50

See footnotes at end of table.

Table 18.—Physical Analysis of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk density (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Kureb:[1]												
S16-4-1	0-4	A	0.0	0.0	5.0	88.9	2.0	96.1	2.2	1.7	44.7	1.27
-2	4-16	E	0.0	0.3	5.8	91.4	2.0	99.6	0.0	0.4	57.8	1.43
-3	16-38	C/Bh	0.0	0.3	5.5	91.7	2.0	99.5	0.2	0.3	50.0	1.47
-4	38-60	C/Bh	0.0	1.0	12.1	85.0	1.1	99.2	0.0	0.8	70.3	1.46
-5	60-82	C	0.0	0.5	8.7	89.2	1.1	99.5	0.0	0.5	85.5	1.46
Leon:[1]												
S16-9-1	0-5	A1	0.0	0.0	1.5	86.7	3.5	91.7	5.1	3.2	---	---
-2	5-8	A2	0.0	0.1	1.5	90.6	3.6	95.8	2.3	1.9	---	---
-3	8-18	E	0.0	0.0	1.8	93.1	2.7	97.6	1.6	0.8	---	---
-4	18-26	Bh1	0.0	0.0	1.2	88.8	3.3	93.3	3.2	3.5	---	---
-5	26-37	Bh2	0.0	0.0	1.1	91.6	3.8	96.5	1.6	1.9	---	---
-6	37-45	E'	0.0	0.0	1.3	92.2	2.9	96.4	1.9	1.7	---	---
-7	45-80	B'h	0.0	0.0	0.8	92.0	3.4	96.2	1.4	2.4	---	---
Leon:[2]												
S45-9-1	0-8	A1	0.0	0.4	3.7	87.2	5.5	96.8	1.1	2.1	16.4	1.42
-2	8-26	A2	0.1	0.4	3.9	84.2	4.9	93.5	3.9	2.6	5.9	1.52
-3	26-36	Bh1	0.0	0.6	4.4	80.6	4.6	90.2	5.9	3.9	2.1	1.44
-4	36-40	Bh2	0.1	0.6	5.9	80.4	4.1	91.1	2.7	6.2	1.8	1.61
-5	40-43	E	0.1	1.2	11.0	80.5	3.3	96.1	1.2	2.7	21.7	1.58
-6	43-59	B'h	0.6	3.0	13.1	66.6	5.1	88.4	2.7	9.2	4.5	1.77
-7	59-80	C	0.2	1.3	3.6	81.9	7.8	94.8	1.2	4.0	0.3	1.62
Lynn Haven:[1]												
S16-23-1	0-7	A1	0.1	0.6	6.5	78.0	4.1	89.3	9.6	1.1	---	---
-2	7-13	A2	0.1	0.5	7.4	84.2	3.5	95.7	3.3	1.0	---	---
-3	13-21	E	0.1	0.6	6.9	85.1	4.1	96.8	2.4	0.8	---	---
-4	21-35	Bh1	0.0	0.6	7.2	77.1	3.7	88.6	5.8	5.6	---	---
-5	35-48	Bh2	0.0	0.6	7.0	80.1	2.6	90.3	4.4	5.3	---	---
-6	48-62	Bh3	0.0	0.2	5.1	85.5	1.3	92.1	2.3	5.6	---	---
-7	62-80	B/C	0.0	0.3	6.5	85.3	1.3	93.4	1.8	4.8	---	---

See footnotes at end of table.

Table 18.—Physical Analysis of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk density (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Mandarin:[1]												
S16-13-1	0-4	A1	0.0	0.0	1.0	91.5	1.4	93.9	4.6	1.5	---	---
-2	4-8	A2	0.0	0.0	1.4	97.3	0.6	99.3	0.2	0.5	---	---
-3	8-26	E	0.0	0.0	1.0	95.7	1.4	98.1	1.5	0.4	---	---
-4	26-30	Bh1	0.0	0.0	0.9	88.9	1.3	91.1	4.8	4.1	---	---
-5	30-35	Bh2	0.0	0.1	1.5	88.7	1.0	91.3	3.2	5.5	---	---
-6	35-40	Bh3	0.0	0.0	1.0	87.7	1.0	89.7	4.0	6.3	---	---
-7	40-46	BE	0.0	0.0	1.0	95.0	1.1	97.1	0.9	2.0	---	---
-8	46-56	E'1	0.0	0.0	0.4	97.4	1.4	99.2	0.4	0.4	---	---
-9	56-62	E'2	0.0	0.0	0.4	96.9	1.8	99.1	0.5	0.4	---	---
-10	62-73	E'3	0.0	0.0	0.5	96.3	2.0	98.8	0.3	0.9	---	---
-11	73-80	B'h	0.0	0.0	1.7	93.7	1.4	96.8	1.5	1.7	---	---
Mascotte:[1]												
S16-8-1	0-5	A	0.0	0.2	2.7	77.7	10.0	90.5	2.5	7.0	---	---
-2	5-8	E1	0.0	0.1	2.1	79.9	11.2	93.3	4.0	2.7	---	---
-3	8-15	E2	0.0	0.1	2.2	81.2	11.0	94.5	3.8	1.7	---	---
-4	15-21	Bh1	0.0	0.1	1.9	72.7	10.1	84.8	5.9	9.3	---	---
-5	21-23	Bh2	0.0	0.1	1.8	70.6	10.2	82.7	6.5	10.8	---	---
-6	23-25	Bh3	0.0	0.1	1.8	75.7	10.0	87.6	4.9	7.5	---	---
-7	25-28	BE	0.0	0.1	1.8	76.0	11.2	89.1	3.3	7.6	---	---
-8	28-46	Btg1	0.0	0.1	1.1	59.2	12.3	72.7	3.5	23.8	---	---
-9	46-58	Btg2	0.0	0.0	1.4	74.4	8.2	84.0	0.8	15.2	---	---
-10	58-80	Cg	0.0	0.0	1.6	81.8	8.7	92.1	0.2	7.7	---	---
Newhan:[2]												
S45-2-1	0-8	A	0.0	0.0	3.8	91.5	4.2	99.5	0.2	0.3	48.0	1.44
-2	8-30	C1	0.0	0.1	5.8	90.4	3.3	99.6	0.1	0.3	46.0	1.50
-3	30-55	C2	0.0	0.4	14.5	81.9	2.6	99.4	0.0	0.6	48.0	1.46
-4	55-80	C3	0.0	0.3	11.5	83.2	4.5	99.5	0.1	0.4	43.4	1.52
Ortega:[1]												
S16-3-1	0-5	A	0.0	0.0	1.0	91.4	3.2	95.6	2.3	2.1	50.9	1.20
-2	5-33	C1	0.0	0.0	0.9	92.2	3.5	96.6	1.2	2.2	38.4	1.37
-3	33-48	C2	0.0	0.0	0.9	93.7	3.1	97.7	0.3	2.0	54.8	1.38
-4	48-63	C3	0.0	0.0	0.9	95.2	2.7	98.8	0.6	0.6	51.3	1.41
-5	63-82	C4	0.0	0.0	0.8	95.6	2.9	99.3	0.4	0.3	54.2	1.43

See footnotes at end of table.

Table 18.–Physical Analysis of Selected Soils–Continued

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk densit (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Pelham:[1]												
S16-18-1	0-6	Ap	0.0	0.1	0.6	61.9	19.4	82.0	15.5	2.5	25.2	1.16
-2	6-14	E1	0.0	0.1	0.4	65.6	22.3	88.4	8.4	3.2	8.8	1.42
-3	14-21	E2	0.0	0.1	0.4	68.0	21.5	90.0	7.0	3.0	6.9	1.47
-4	21-26	Btg1	0.0	0.0	0.4	60.0	18.7	79.1	7.8	13.1	0.8	1.57
-5	26-44	Btg2	0.0	0.1	0.3	49.4	15.7	65.5	7.0	27.5	0.0	1.55
-6	44-60	Btg3	0.0	0.1	0.3	52.9	17.3	70.6	7.0	22.4	0.4	1.46
-7	60-69	Btg4	0.0	0.1	0.3	60.1	13.8	74.3	7.5	18.2	0.6	1.52
Penney:[1]												
S16-20-1	0-5	A	0.0	0.0	0.9	41.6	50.1	92.6	6.0	1.4	78.2	1.24
-2	5-11	E1	0.0	0.0	0.7	62.8	32.0	95.5	3.2	1.3	32.9	1.35
-3	11-30	E2	0.0	0.0	0.8	78.4	17.0	96.2	2.7	1.1	42.7	1.31
-4	30-48	E3	0.0	0.0	0.9	82.5	12.6	96.0	2.9	1.1	36.8	1.36
-5	48-72	EB	0.0	0.0	1.2	82.3	12.4	95.9	3.3	0.8	25.3	1.40
-6	72-80	EB	0.0	0.1	1.0	81.1	12.4	94.6	3.0	2.4	20.7	1.45
Pottsburg:[1]												
S16-11-1	0-3	A	0.0	0.1	1.9	87.4	2.2	91.6	6.2	2.2	---	---
-2	3-10	E1	0.0	0.1	1.9	88.0	2.5	92.5	4.9	2.6	---	---
-3	10-22	E2	0.0	0.1	1.7	88.5	2.7	93.0	4.1	2.9	---	---
-4	22-34	E2	0.0	0.1	1.6	89.6	3.4	94.7	3.4	1.9	---	---
-5	34-57	E3	0.0	0.1	1.7	92.5	2.4	96.7	2.6	0.7	---	---
-6	57-80	Bh	0.0	0.1	1.5	92.4	2.3	96.3	2.2	1.5	---	---
Ridgewood:[2]												
S45-4-1	0-7	Ap	0.0	0.0	2.3	92.4	1.6	96.3	1.4	2.3	32.9	1.33
-2	7-24	Bw	0.0	0.0	2.1	89.0	4.5	95.6	2.3	2.1	25.0	1.42
-3	24-29	C1	0.0	0.1	2.3	89.8	3.9	96.1	1.9	2.0	23.7	1.47
-4	29-35	C2	0.0	0.0	2.1	90.0	4.4	96.5	1.9	1.6	28.9	1.48
-5	35-46	C3	0.0	0.0	2.1	92.0	3.5	97.6	1.4	1.0	29.3	1.53
-6	46-80	C4	0.0	0.0	2.0	93.5	3.1	98.6	0.8	0.6	30.0	1.54

See footnotes at end of table.

Table 18.—Physical Analysis of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk density (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Sapelo:[1]												
S16-15-1	0-3	A1	0.0	0.0	0.8	80.7	5.1	86.6	11.0	2.4	---	---
-2	3-6	A2	0.0	0.0	0.6	85.9	6.5	93.0	5.2	1.8	---	---
-3	6-23	E	0.0	0.0	0.6	88.6	6.6	95.8	3.4	0.8	---	---
-4	23-30	Bh1	0.0	0.0	0.6	83.7	5.8	90.1	4.9	5.0	---	---
-5	30-32	Bh2	0.0	0.0	0.6	84.2	6.0	90.8	4.5	4.7	---	---
-6	32-38	E/Bh	0.0	0.0	0.5	87.6	6.9	95.0	3.5	1.5	---	---
-7	38-56	E'	0.0	0.0	0.4	89.5	3.9	94.2	2.3	3.5	---	---
-8	56-62	Btg1	0.0	0.0	0.3	74.5	2.8	77.6	2.1	20.3	---	---
-9	62-80	Btg2	0.0	0.0	0.4	78.3	2.9	81.6	1.5	16.9	---	---
Stockade:[1]												
S16-12-1	0-12	A	0.0	0.1	1.3	65.4	1.3	68.1	15.0	16.9	---	---
-2	12-26	Btg1	0.1	0.4	1.9	65.4	1.1	68.9	9.1	22.0	---	---
-3	26-36	Btg2	0.8	1.7	2.6	62.0	1.8	68.9	8.4	22.7	---	---
-4	36-46	Btg2	0.0	0.4	1.7	66.0	1.2	69.3	8.1	22.6	---	---
Surrency:[1]												
S16-21-1	0-14	A1	0.0	0.1	0.4	68.8	11.0	80.3	17.3	2.4	---	---
-2	14-18	A2	0.0	0.0	0.4	76.5	11.1	88.0	9.1	2.9	---	---
-3	18-26	E	0.0	0.1	0.4	81.8	12.1	94.4	4.2	1.4	---	---
-4	26-38	Btg1	0.0	0.1	0.3	67.1	10.6	78.1	8.2	13.7	---	---
-5	38-49	Btg2	0.0	0.0	0.5	68.8	10.0	79.4	6.1	14.5	---	---
-6	49-70	Btg3	0.0	0.1	1.6	67.5	7.6	76.8	5.6	17.6	---	---
-7	70-80	Cg	0.0	0.0	0.6	52.5	9.3	62.4	8.3	29.3	---	---
Wesconnett:[1]												
S16-24-1	0-2	A	0.1	0.3	3.6	78.3	2.5	84.8	13.3	1.9	---	---
-2	2-10	Bh1	0.0	0.4	3.4	85.2	2.7	91.7	6.4	1.9	---	---
-3	10-26	Bh2	0.1	0.3	3.5	85.0	2.7	91.6	5.8	2.6	---	---
-4	26-32	Bh3	0.0	0.5	4.2	87.7	2.1	94.5	3.2	2.3	---	---
-5	32-44	E/Bh	0.1	0.5	3.8	88.4	2.3	95.1	3.2	1.7	---	---
-6	44-72	B'h1	0.2	0.6	1.3	89.5	1.3	92.9	3.8	3.3	---	---
-7	72-80	B'h2	0.0	0.0	0.6	92.1	1.3	94.0	3.7	2.3	---	---

See footnotes at end of table.

Table 18.—Physical Analysis of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Saturated hydraulic conductivity	Bulk density (field moist)
	In		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	g/cm^3
Yonges:[1]												
S16-16-1	0-3	Ap	0.1	0.9	8.3	50.3	8.5	68.1	21.8	10.1	---	---
-2	3-6	E	0.3	2.3	13.2	56.0	7.8	79.6	11.7	8.7	---	---
-3	6-25	Btg1	0.1	1.5	8.5	41.6	6.3	58.0	12.0	30.0	---	---
-4	25-31	Btg2	1.4	2.7	8.2	35.2	7.0	54.5	13.2	32.3	---	---
-5	31-55	Btg3	1.5	2.8	8.8	35.7	6.3	55.1	12.6	32.3	---	---
-6	55-65	Btg4	0.2	1.5	10.1	43.3	6.4	61.5	9.9	28.6	---	---
-7	65-80	BCg	0.4	3.2	21.0	44.5	3.1	72.2	5.8	22.0	---	---
Yulee:[1]												
S16-25-1	0-7	A1	0.0	0.1	0.2	23.7	12.8	36.8	20.0	43.2	---	---
-2	7-14	A2	0.0	0.0	0.1	28.7	14.7	43.5	16.5	40.0	---	---
-3	14-28	Bg1	0.0	0.0	0.2	44.1	20.8	65.1	11.4	23.5	---	---
-4	28-40	Bg2	---	---	---	---	---	---	---	---	---	---
-5	40-48	Bg3	0.0	0.0	0.1	40.3	18.6	59.0	13.2	27.8	---	---
-6	48-66	Bg4	0.0	0.0	0.2	40.0	17.4	57.6	12.6	29.8	---	---
-7	66-75	2C	0.0	0.0	0.1	23.8	31.8	55.7	15.4	28.9	---	---
-8	75-80	2Cg	0.0	0.0	0.1	12.5	28.6	41.2	22.9	35.9	---	---

1 The soil is the typical pedon, as sampled in Duval County, Florida.
2 The soil is the typical pedon, as sampled in Nassau County, Florida.

Table 19.—Chemical Analysis of Selected Soils

(The symbol > means greater than and < means less than. TR means trace. Dashes indicate that material was were not determined)

Series name and sample numbers	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	Pyroph extra: C	Fe
	In		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm		Pct	Pct
Albany:[1]															
S16-10-1	0-3	A	1.74	0.23	0.02	0.05	2.04	6.00	8.04	25	1.29	0.03	5.5	---	---
-2	3-15	E1	0.28	0.00	0.02	0.01	0.31	2.10	2.41	13	0.28	0.02	6.2	---	---
-3	15-29	E2	0.19	0.00	0.01	0.00	0.20	1.30	1.50	13	0.14	0.01	6.3	---	---
-4	29-39	E3	0.06	0.00	0.01	0.00	0.07	0.60	0.67	10	0.04	0.01	6.3	---	---
-5	39-50	E4	0.11	0.00	0.02	0.00	0.13	0.30	0.43	30	0.01	0.02	6.1	---	---
-6	50-63	Bt	0.81	1.30	0.06	0.08	2.25	4.90	7.15	31	0.04	0.02	5.6	---	---
-7	63-88	Btg	0.74	1.96	0.09	0.16	2.95	10.80	13.75	21	0.04	0.03	5.4	---	---
Blanton:[1]															
S16-14-1	0-3	A	1.00	0.06	0.03	0.04	1.13	5.30	6.43	18	1.42	0.02	5.2	---	---
-2	3-9	E1	0.14	0.00	0.02	0.01	0.17	4.20	4.37	4	0.54	0.02	5.4	---	---
-3	9-21	E2	0.03	0.00	0.01	0.00	0.04	2.00	2.04	2	0.29	0.02	5.6	---	---
-4	21-36	E3	0.01	0.00	0.01	0.00	0.02	1.10	1.12	2	0.10	0.02	5.9	---	---
-5	36-54	E4	0.00	0.00	0.01	0.00	0.01	0.30	0.31	9	0.04	0.02	5.8	---	---
-6	54-65	Bt1	0.21	0.26	0.03	0.04	0.54	5.30	5.84	9	0.13	0.02	4.9	---	---
-7	65-80	Bt2	0.18	0.58	0.05	0.04	0.85	6.90	7.75	11	0.07	0.02	5.0	---	---
Boulogne:[1]															
S16-5-1	0-6	A	0.50	0.10	TR	TR	0.60	6.90	7.50	8	1.34	0.06	4.4	---	---
-2	6-16	Bh	0.30	TR	0.10	TR	0.40	14.20	14.60	3	1.60	0.09	4.9	1.32	0.02
-3	16-31	E	0.10	TR	TR	TR	0.10	3.40	3.50	3	0.36	0.04	5.3	---	---
-4	31-39	B'h1	0.10	TR	TR	TR	0.10	4.70	4.80	2	0.28	0.06	5.2	0.37	0.02
-5	39-80	B'h2	0.10	TR	TR	0.00	0.10	10.90	11.00	1	0.72	0.06	5.1	0.68	0.01
Cornelia:[1]															
S16-6-1	0-7	A	1.00	TR	0.10	0.10	1.20	13.30	14.50	8	3.30	0.10	4.1	---	---
-2	7-13	E1	0.40	0.10	TR	TR	0.50	4.50	5.00	10	1.06	0.05	4.2	---	---
-3	13-39	E2	0.20	0.10	TR	TR	0.30	0.80	1.10	27	0.20	0.02	4.8	---	---
-4	39-44	Bh1	0.80	0.20	0.10	TR	1.10	19.00	20.10	5	1.45	0.06	4.4	1.20	0.29
-5	44-53	Bh2	0.30	TR	0.20	TR	0.50	18.60	19.10	3	1.16	0.12	4.5	0.96	0.17
-6	53-73	Bh3	0.10	TR	0.10	0.00	0.20	7.00	7.20	3	0.50	0.08	4.9	0.48	0.03
-7	73-92	Bh4	0.10	TR	0.10	0.00	0.20	8.70	8.90	2	0.71	0.06	5.2	0.38	0.02
-8	92-106	Bh5	0.10	TR	TR	0.00	0.10	6.90	7.00	1	0.50	0.04	5.5	0.49	0.00

See footnotes at end of table.

Table 19.—Chemical Analysis of Selected Soils—Continued

Series name and sample numbers	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	Pyroph... extra...: C	Pyroph... extra...: Fe
	In		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm		Pct	Pct
Corolla:[2]															
S45-20-1	0-6	A	2.37	0.08	0.06	0.01	2.52	3.22	5.74	44	0.13	0.02	6.4	6.4	6.8
-2	6-12	C1	3.72	0.06	0.08	0.00	3.86	3.12	6.98	55	0.12	0.03	6.9	7.4	7.3
-3	12-20	C2	7.35	0.06	0.10	0.00	7.51	2.93	10.44	72	0.09	0.03	7.2	7.5	7.9
-4	20-26	C3	12.25	0.03	0.12	0.00	12.40	2.49	14.89	83	0.09	0.03	7.3	7.4	7.9
-5	26-41	C4	20.25	0.06	0.17	0.01	20.49	0.09	20.58	99	0.07	0.03	7.2	7.3	7.7
-6	41-80	C5	14.75	0.04	0.14	0.00	14.93	0.42	15.35	97	0.05	0.03	7.6	7.4	8.2
Evergreen:[2]															
S45-14-1	0-3	Oe	3.85	5.35	0.91	0.40	10.51	117.87	128.38	8	48.00	0.01	3.6	3.2	2.8
-2	3-11	Oa	0.25	0.90	0.80	0.11	2.06	84.56	86.62	2	16.75	0.00	3.8	3.2	2.9
-3	11-14	A1	0.05	0.14	0.38	0.02	0.59	42.23	42.82	1	5.53	0.05	3.9	3.4	3.1
-4	14-17	A2	0.02	0.07	0.27	0.01	0.37	16.93	17.30	2	2.55	0.00	4.1	3.7	3.4
-5	17-26	E	0.02	0.03	0.14	0.00	0.19	2.43	2.62	7	0.24	0.00	4.6	4.1	3.9
-6	26-54	Bh1	0.03	0.05	0.20	0.00	0.28	15.95	16.23	2	2.61	0.02	4.6	4.3	4.1
-7	54-80	Bh2	0.01	0.02	0.14	0.00	0.17	1.86	2.03	8	0.44	0.00	4.6	4.6	4.4
Fripp:[1]															
S16-19-1	0-6	A	0.23	0.52	0.09	0.04	0.88	2.31	3.19	28	0.86	0.08	5.5	---	---
-2	6-30	C1	0.19	0.12	0.03	0.01	0.35	0.71	1.06	33	0.04	0.48	5.9	---	---
-3	30-54	C2	0.18	0.14	0.04	0.01	0.37	0.36	0.73	51	0.04	1.15	6.2	---	---
-4	54-78	C3	0.19	0.15	0.05	0.02	0.41	0.27	0.68	60	0.02	0.04	6.7	---	---
-5	78-90	C3	2.20	0.12	0.05	0.01	2.38	0.00	2.38	100	0.01	0.05	6.8	---	---
Hurricane:[2]															
S45-11-1	0-5	Ap	0.18	0.06	0.03	0.01	0.28	4.85	5.13	5	0.86	0.03	4.3	4.0	4.1
-2	5-10	E1	0.05	0.01	0.02	0.00	0.08	2.70	2.78	3	0.38	0.03	4.5	4.7	4.7
-3	10-20	E2	0.03	0.01	0.03	0.00	0.07	1.79	1.86	4	0.28	0.02	4.5	4.8	4.8
-4	20-39	E3	0.02	0.02	0.02	0.00	0.06	0.93	0.99	6	0.12	0.02	4.4	4.8	4.9
-5	39-68	E4	0.01	0.01	0.01	0.00	0.03	0.04	0.07	75	0.02	0.02	4.5	4.9	5.0
-6	68-77	Bh1	0.02	0.01	0.02	0.00	0.05	0.58	0.63	8	0.07	0.02	4.4	4.8	4.8
-7	77-80	Bh2	0.02	0.01	0.02	0.00	0.05	3.54	3.59	1	0.26	0.03	4.2	4.7	4.7
Kershaw:[1]															
S16-7-1	0-3	A	0.5	0.1	TR	TR	0.60	4.00	4.60	13	1.02	0.05	5.3	---	---
-2	3-25	C1	TR	TR	0.0	TR	TR	1.80	1.80	---	0.22	0.02	5.5	---	---
-3	25-51	C1	0.1	TR	0.0	0.00	0.10	1.40	1.50	7	0.12	0.03	5.6	---	---
-4	51-80	C2	0.1	TR	0.1	0.00	0.20	1.20	1.40	14	0.08	0.02	5.9	---	---

See footnotes at end of table.

Table 19.—Chemical Analysis of Selected Soils—Continued

Series name and sample numbers	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	Pyrop extr: C	Pyrop extr: Fe
	In		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm		Pct	Pct
Kureb:[1]															
S16-4-1	0-4	A	0.60	0.10	TR	TR	0.70	4.30	5.00	14	1.36	0.04	4.6	---	---
-2	4-16	E	TR	TR	TR	0.00	TR	0.00	---	---	0.06	0.01	5.4	---	---
-3	16-38	C/Bh	TR	TR	TR	0.00	TR	0.40	0.40	---	0.10	0.03	4.9	0.12	0.04
-4	38-60	C/Bh	TR	TR	TR	0.00	TR	0.20	0.20	---	0.06	0.03	5.1	0.06	0.40
-5	60-82	C	TR	TR	TR	0.00	TR	0.40	0.40	---	0.06	0.02	5.4	---	---
Leon:[1]															
S16-9-1	0-5	A1	1.10	0.36	0.05	0.06	1.57	10.50	12.07	13	2.16	0.06	4.2	---	---
-2	5-8	A2	0.30	0.15	0.03	0.01	0.49	3.40	3.89	13	0.68	0.03	4.6	---	---
-3	8-18	E	0.06	0.03	0.01	0.00	0.10	0.80	0.90	11	0.17	0.02	5.4	---	---
-4	18-26	Bh1	0.01	0.03	0.03	0.02	0.09	15.20	15.29	1	1.47	0.10	4.0	1.40	0.01
-5	26-37	Bh2	0.01	0.03	0.03	0.00	0.07	6.10	6.17	1	0.24	0.03	4.5	0.56	0.01
-6	37-45	E'	0.02	0.01	0.02	0.01	0.06	3.60	3.66	2	0.31	0.04	4.9	0.26	0.01
-7	45-80	B'h	0.02	0.02	0.01	0.00	0.05	7.90	7.95	1	0.62	0.03	5.0	0.70	0.01
Leon:[2]															
S45-9-1	0-8	A1	1.22	2.80	8.31	0.46	12.79	0.00	12.79	100	0.58	7.69	5.9	5.8	6.5
-2	8-26	A2	1.95	3.29	16.40	0.66	22.30	0.28	22.58	99	0.76	11.53	5.8	5.7	6.1
-3	26-36	Bh1	2.55	3.70	17.53	0.76	24.54	2.05	26.59	92	1.06	13.00	5.9	5.9	6.2
-4	36-40	Bh2	1.65	3.45	13.40	0.67	19.17	1.96	21.13	91	0.58	9.31	6.0	6.0	6.6
-5	40-43	E	1.12	3.27	13.85	0.49	18.73	0.66	19.39	97	0.24	10.43	6.1	6.0	6.4
-6	43-59	B'h	1.02	2.67	7.53	0.58	11.80	1.40	13.20	89	0.31	3.72	6.1	6.1	6.5
-7	59-80	C	0.93	1.52	2.52	0.24	5.22	1.68	6.90	76	0.28	2.03	5.8	5.7	5.9
Lynn Haven:[1]															
S16-23-1	0-7	A1	0.21	0.16	0.04	0.03	0.44	2.27	2.71	16	2.18	0.08	4.0	---	---
-2	7-13	A2	0.07	0.02	0.00	0.00	0.09	1.82	1.91	5	0.53	0.03	4.6	---	---
-3	13-21	E	0.02	0.00	0.00	0.00	0.02	19.08	19.10	>1	0.28	0.02	5.0	---	---
-4	21-35	Bh1	0.03	0.02	0.01	0.01	0.07	14.99	15.06	1	2.22	0.07	4.4	0.86	0.00
-5	35-48	Bh2	0.04	0.02	0.01	0.00	0.07	15.90	15.97	>1	1.44	0.06	4.6	1.22	0.00
-6	48-62	Bh3	0.04	0.07	0.05	0.01	0.17	8.77	8.94	2	0.56	0.27	5.1	0.57	0.01
-7	62-80	B/C	0.04	0.06	0.01	0.01	0.12	8.04	8.16	2	0.60	0.08	5.0	---	---

See footnotes at end of table.

Table 19.—Chemical Analysis of Selected Soils—Continued

Series name and sample numbers	Depth	Horizon	Extractable bases: Ca	Mg	Na	K	Sum	Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	Pyrop[hosphate] extr[actable]: C	Fe
	In		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm		Pct	Pct
Mandarin:[1]															
S16-13-1	0-4	A	0.85	0.21	0.01	0.00	1.07	10.60	11.67	9	1.24	0.90	4.3	---	---
-2	4-8	E	0.38	0.01	0.03	0.03	0.45	7.20	7.65	6	0.08	0.04	3.0	---	---
-3	8-26	E	0.04	0.00	0.01	0.00	0.05	0.60	0.65	8	0.14	0.02	5.3	---	---
-4	26-30	Bh1	0.18	0.07	0.04	0.02	0.31	15.00	15.31	2	2.10	0.03	4.5	1.24	0.01
-5	30-35	Bh2	0.03	0.02	0.02	0.01	0.08	21.10	21.18	>1	1.86	0.02	4.8	1.74	0.01
-6	35-40	Bh3	0.00	0.02	0.04	0.01	0.07	26.00	26.07	>1	2.54	0.04	4.7	2.18	0.01
-7	40-46	BE	0.01	0.00	0.01	0.00	0.02	2.00	2.02	1	0.27	0.02	5.7	0.17	0.00
-8	46-56	E'1	0.01	0.00	0.01	0.00	0.02	0.60	0.62	3	0.07	0.02	6.3	---	---
-9	56-62	E'2	0.00	0.00	0.01	0.00	0.01	0.30	0.31	3	0.04	0.02	6.6	---	---
-10	62-73	E'3	0.00	0.00	0.01	0.00	0.01	1.30	1.71	1	0.14	0.02	6.6	---	---
-11	73-80	B'h	0.00	0.00	0.02	0.00	0.02	7.00	7.02	>1	0.65	0.02	5.8	0.60	0.00
Mascotte:[1]															
S16-8-1	0-5	A	1.46	0.72	0.10	0.10	2.38	25.30	27.68	9	6.76	0.09	3.9	---	---
-2	5-8	E1	0.26	0.10	0.01	0.01	0.38	4.40	4.78	8	0.48	0.02	4.5	---	---
-3	8-15	E2	0.14	0.02	0.01	0.00	0.17	1.10	1.27	13	0.14	0.02	5.2	---	---
-4	15-21	Bh1	0.21	0.15	0.03	0.01	0.40	22.20	22.60	2	2.58	0.03	4.6	1.94	0.02
-5	21-23	Bh2	0.11	0.13	0.06	0.02	0.32	37.10	37.42	1	3.24	0.03	4.7	2.95	0.01
-6	23-25	Bh3	0.03	0.04	0.04	0.02	0.13	18.70	18.83	1	1.23	0.03	5.0	1.18	0.02
-7	25-28	BE	0.02	0.08	0.03	0.00	0.13	8.40	8.53	2	0.44	0.03	5.1	0.24	0.04
-8	28-46	Btg1	0.09	0.73	0.06	0.00	0.88	11.40	12.28	7	0.15	0.03	5.0	---	---
-9	46-58	Btg2	0.08	0.65	0.05	0.03	0.81	7.00	7.81	10	0.08	0.03	5.1	---	---
-10	58-80	Cg	0.10	0.43	0.05	0.02	0.60	3.00	3.60	17	0.01	0.02	5.6	---	---
Newhan:[2]															
S45-2-1	0-7	A	0.58	0.08	0.02	0.00	0.68	0.00	0.68	100	0.10	0.05	6.9	6.6	6.4
-2	7-20	C1	0.59	0.08	0.02	0.00	0.69	0.00	0.69	100	0.08	0.04	6.9	6.7	6.4
-3	20-55	C2	1.82	0.07	0.03	0.00	1.92	0.00	1.92	100	0.08	0.06	7.3	7.2	8.2
-4	55-80	C3	1.97	0.07	0.04	0.00	2.08	0.00	2.08	100	0.08	0.07	7.3	7.2	7.3
Ortega:[1]															
S16-3-1	0-5	A	0.40	0.10	0.00	0.00	0.50	3.00	3.50	14	1.00	0.07	4.8	---	---
-2	5-33	C1	0.00	0.00	0.00	0.00	0.00	1.10	1.10	0	0.21	0.02	5.3	---	---
-3	33-48	C2	0.00	0.00	0.00	0.00	0.00	0.90	0.90	0	0.07	0.02	5.6	---	---
-4	48-63	C3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.03	0.02	6.4	---	---
-5	63-82	C4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.01	0.02	6.2	---	---

See footnotes at end of table.

Table 19.—Chemical Analysis of Selected Soils—Continued

Series name and sample numbers	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: Na	Extractable bases: K	Extractable bases: Sum	Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	Pyroph extra: C	Pyroph extra: Fe
	In		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm		Pct	Pct
Pelham:[1]															
S16-18-1	0-6	Ap	1.66	0.28	0.05	0.05	2.04	2.22	4.26	48	2.56	0.08	4.6	---	---
-2	6-14	E1	0.10	0.03	0.01	0.01	0.15	5.63	5.78	3	0.43	0.03	4.8	---	---
-3	14-21	E2	0.09	0.04	0.01	0.01	0.15	2.96	3.11	5	0.12	0.04	4.8	---	---
-4	21-26	Btg1	0.37	0.50	0.03	0.03	0.93	9.56	10.49	9	0.10	0.08	4.7	---	---
-5	26-44	Btg2	0.46	2.10	0.08	0.05	2.69	20.00	22.69	12	0.13	0.06	4.5	---	---
-6	44-60	Btg3	0.54	2.18	0.10	0.06	2.88	15.55	18.43	16	0.08	0.11	4.6	---	---
-7	60-69	Btg4	0.92	2.34	0.15	0.08	3.49	12.44	15.93	22	0.06	0.13	4.7	---	---
Penney:[1]															
S16-20-1	0-5	A	2.20	0.22	0.05	0.07	2.54	5.78	8.32	31	0.99	0.14	5.3	---	---
-2	5-11	E1	0.12	0.03	0.02	0.02	0.19	2.07	2.26	8	0.26	0.04	5.1	---	---
-3	11-30	E2	0.06	0.02	0.02	0.01	0.11	1.78	1.89	6	0.18	0.03	4.8	---	---
-4	30-48	E3	0.04	0.02	0.02	0.01	0.09	1.18	1.27	7	0.06	0.03	4.7	---	---
-5	48-72	EB1	0.06	0.03	0.02	0.02	0.13	1.04	1.17	11	0.02	0.04	4.7	---	---
-6	72-80	EB2	---	---	---	---	---	---	---	---	---	---	---	---	---
Pottsburg:[1]															
S16-11-1	0-3	A	0.63	0.06	0.04	0.05	0.78	6.80	7.58	10	1.38	0.16	4.5	---	---
-2	3-10	E1	0.06	0.01	0.02	0.02	0.11	4.90	5.01	2	0.73	0.02	5.6	---	---
-3	10-22	E2	0.01	0.01	0.02	0.01	0.05	3.10	3.15	2	0.35	0.02	5.8	---	---
-4	22-34	E2	0.01	0.00	0.01	0.00	0.02	2.20	2.22	1	0.20	0.02	5.8	---	---
-5	34-57	E3	0.04	0.00	0.04	0.00	0.08	0.40	0.48	17	0.04	0.03	6.3	---	---
-6	57-80	Bh	0.01	0.00	0.01	0.00	0.02	5.50	5.52	>1	0.42	0.04	5.5	0.36	0.01
Ridgewood:[2]															
S45-4-1	0-7	Ap	0.37	0.19	0.45	0.03	1.04	3.53	4.57	23	0.80	0.08	4.8	4.8	4.3
-2	7-24	Bw	0.28	0.29	1.15	0.05	1.77	1.67	3.44	51	0.36	0.39	5.0	5.0	4.7
-3	24-29	C1	0.08	0.06	0.03	0.01	0.18	1.06	1.24	15	0.19	0.19	5.1	5.0	4.7
-4	29-35	C2	0.04	0.04	0.02	0.00	0.10	0.36	0.46	22	0.09	0.09	5.5	4.7	4.7
-5	35-46	C3	0.03	0.02	0.01	0.00	0.06	0.00	0.06	100	0.04	0.04	5.0	4.8	4.7
-6	46-80	C4	0.02	0.01	0.01	0.00	0.04	0.00	0.04	100	0.05	0.05	6.8	6.3	4.9
Sapelo:[1]															
S16-15-1	0-3	A1	1.51	0.30	0.06	0.08	1.95	9.90	11.85	16	2.31	0.06	4.4	---	---
-2	3-6	A2	0.74	0.13	0.02	0.01	0.90	3.80	4.70	19	0.84	0.02	4.9	---	---
-3	6-23	E	0.05	0.00	0.02	0.00	0.07	1.10	1.17	6	0.13	0.03	6.2	---	---
-4	23-30	Bh1	1.10	0.02	0.04	0.01	1.17	18.80	19.97	6	2.04	0.03	4.6	1.69	0.01
-5	30-32	Bh2	0.06	0.02	0.02	0.00	0.10	19.60	19.70	1	1.64	0.02	4.7	1.50	0.01
-6	32-38	E/Bh	0.01	0.00	0.01	0.00	0.02	3.80	3.82	1	0.34	0.15	5.5	0.19	0.01
-7	38-56	E'	0.01	0.00	0.02	0.00	0.03	4.00	4.03	1	0.30	0.02	4.4	---	---
-8	56-62	Btg1	0.04	0.05	0.02	0.01	0.12	10.20	10.32	1	0.45	0.02	5.1	---	---
-9	62-80	Btg2	0.13	0.63	0.05	0.05	0.86	6.40	7.26	12	0.15	0.04	5.3	---	---

See footnotes at end of table.

Table 19.—Chemical Analysis of Selected Soils—Continued

Series name and sample numbers	Depth	Horizon	Extractable bases					Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	Electrical conductivity	pH H_2O (1:1)	Pyroph extra	
			Ca	Mg	Na	K	Sum							C	Fe
	In		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmhos/cm		Pct	Pct
Stockade:[1]															
S16-12-1	0-12	A	8.86	1.14	0.20	0.09	10.29	16.20	26.49	39	1.87	0.16	5.2	---	---
-2	12-26	Btg1	13.41	1.93	0.24	0.02	15.60	7.60	23.20	67	0.31	0.14	6.4	---	---
-3	26-36	Btg2	13.23	1.46	0.21	0.04	14.94	6.70	21.64	69	0.25	0.17	6.8	---	---
-4	36-46	Cg	14.11	1.42	0.40	0.03	15.96	5.90	21.86	73	0.54	0.27	7.1	---	---
Surrency:[1]															
S16-21-1	0-14	A1	0.58	0.11	0.05	0.03	0.77	15.44	16.21	5	2.75	0.14	4.6	---	---
-2	14-18	A2	0.04	0.02	0.01	0.00	0.07	5.68	5.75	1	0.85	0.07	4.6	---	---
-3	18-26	E	0.02	0.02	0.01	0.00	0.05	1.14	1.19	4	0.14	0.05	4.9	---	---
-4	26-38	Btg1	0.26	0.68	0.18	0.02	1.14	5.45	6.59	17	0.23	0.08	4.6	---	---
-5	38-49	Btg2	0.71	1.02	0.27	0.02	2.02	6.81	8.83	23	0.24	0.08	4.8	---	---
-6	49-70	Btg3	1.79	1.98	0.35	0.06	4.18	6.81	10.99	38	0.11	0.20	4.5	---	---
-7	70-80	Cg	4.39	3.54	1.34	0.15	9.42	10.90	20.32	46	0.10	0.31	4.2	---	---
Wesconnett:[1]															
S16-24-1	0-2	A	0.13	0.10	0.03	0.08	0.34	26.80	27.14	1	2.97	0.14	3.9	---	---
-2	2-10	Bh1	0.02	0.03	0.00	0.03	0.08	10.81	10.89	1	1.86	0.06	4.1	0.58	0.00
-3	10-26	Bh2	0.01	0.02	0.00	0.01	0.04	10.58	10.62	>1	1.35	0.05	4.4	0.66	0.00
-4	26-32	Bh3	0.01	0.01	0.00	0.00	0.02	4.95	4.97	>1	0.74	0.04	4.7	0.49	0.00
-5	32-44	E/Bh	0.01	0.00	0.00	0.00	0.01	1.45	1.46	1	0.17	0.28	5.1	---	---
-6	44-72	Bh'1	0.02	0.01	0.00	0.00	0.03	11.41	11.44	>1	1.17	0.42	5.1	0.86	0.02
-7	72-80	Bh'2	0.01	0.00	0.00	0.00	0.01	17.20	17.21	>1	1.30	0.46	5.2	1.17	0.01
Yonges:[1]															
S16-16-1	0-3	Ap	17.16	4.49	0.30	0.31	22.26	3.00	25.26	88	3.65	0.38	7.1	---	---
-2	3-6	E	5.70	2.20	0.14	0.08	8.12	1.40	9.52	85	0.65	0.24	7.6	---	---
-3	6-25	Btg1	14.41	8.11	0.21	0.06	22.79	5.30	28.09	81	0.37	0.34	8.0	---	---
-4	25-31	Btg2	27.00	6.79	0.16	0.05	34.00	3.90	37.90	90	0.24	0.29	8.2	---	---
-5	31-55	Btg3	25.50	8.79	0.18	0.05	34.52	4.80	39.32	88	0.14	0.32	8.2	---	---
-6	55-65	Btg4	12.29	6.36	0.15	0.08	18.88	4.70	23.58	80	0.08	0.26	8.1	---	---
-7	65-80	BCg	8.98	5.66	0.12	0.06	14.82	5.00	19.82	75	0.09	0.18	8.1	---	---
Yulee:[1]															
S16-25-1	0-7	A1	17.62	2.51	1.88	0.12	22.13	21.25	43.48	51	2.32	0.54	5.1	---	---
-2	7-14	A2	21.48	2.63	1.01	0.07	25.19	14.08	39.27	64	1.16	0.46	6.0	---	---
-3	14-28	Bg1	15.42	1.65	0.71	0.04	17.82	6.36	24.18	74	0.21	0.49	7.9	---	---
-4	28-40	Bg2	---	---	---	---	---	---	---	---	---	---	---	---	---
-5	40-48	Bg3	18.28	1.56	0.40	0.05	20.29	7.95	28.24	72	0.10	0.46	7.9	---	---
-6	48-66	Bg4	19.02	1.24	0.29	0.06	20.61	8.63	29.24	70	0.10	0.32	7.9	---	---
-7	66-75	2C	18.70	0.75	0.15	0.12	19.72	8.63	28.35	70	0.09	0.36	8.0	---	---
-8	75-80	2Cg	23.52	0.51	0.16	0.19	24.37	9.99	34.36	71	0.07	0.48	8.4	---	---

[1] The soil is the typical pedon, as sampled in Duval County, Florida.
[2] The soil is the typical pedon, as sampled in Nassau County, Florida.

Table 20.—Clay Mineralogy of Selected Soils

(TR means trace. Dashes indicate that material was not detected or data were not determined)

Soil series and sample numbers	Depth	Horizon	Clay minerals: Montmorillonite	Clay minerals: 14-angstrom intergrade	Clay minerals: Kaolinite	Clay minerals: Gibbsite	Clay minerals: Quartz	Clay minerals: Mica
	In		Pct	Pct	Pct	Pct	Pct	Pct
Albany:[1]								
S16-10-1	0-3	A	0	41	27	0	32	0
-4	29-39	Eg	0	31	20	11	36	2
-6	50-63	Btg	TR	22	53	0	15	10
Blanton:[1]								
S16-14-1	0-3	A	0	36	14	0	50	0
-4	21-36	E3	0	9	2	0	89	0
-6	54-65	Bt1	0	39	38	0	13	10
-8	81-90	Bt2	3	30	46	0	11	10
Boulogne:[1]								
S16-5-1	0-6	A	16	20	12	0	52	0
-2	6-16	Bh	TR	30	11	7	52	0
-5	39-80	B'h2	0	0	41	39	20	0
Cornelia:[1]								
S16-6-1	0-7	A	0	47	10	0	43	0
-4	39-44	Bh1	47	9	12	0	32	0
-6	73-92	Bh4	0	20	10	0	70	0
Corolla:[2]								
S45-20-1	0-6	A	35	11	11	---	43	---
-4	20-26	C3	54	3	7	---	36	---
-6	41-80	C5	31	7	10	---	52	---
Evergreen:[2]								
S45-14-3	11-14	A1	0	62	12	---	26	---
-6	26-54	Bh1	0	53	15	---	32	---
Fripp:[1]								
S16-19-1	0-6	A1	27	TR	10	0	63	0
-3	30-54	C2	0	25	29	0	46	0
-5	78-90	C3	0	0	18	0	66	16
Hurricane:[2]								
S45-11-1	0-5	Ap	0	63	15	---	22	---
-3	10-20	E2	0	64	14	---	22	---
-7	77-80	Bh2	0	41	13	---	46	---
Kershaw:[1]								
S16-7-1	0-3	A1	30	18	8	0	34	10
-3	25-51	C1	0	54	13	10	23	0
-4	51-80	C2	0	61	11	6	22	0
Kureb:[1]								
S16-4-1	0-4	A	0	48	11	0	41	0
-3	16-38	C/Bh	0	36	11	0	53	0
-5	60-82	C	0	52	9	0	39	0
Leon:[1]								
S16-9-1	0-5	A1	0	0	3	0	97	0
-4	18-26	Bh1	19	12	7	0	62	0
-7	45-80	B'h	10	51	14	0	52	0

See footnotes at end of table.

Table 20.—Clay Mineralogy of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Clay minerals					
			Montmo- rillonite	14-angstrom intergrade	Kaolinite	Gibbsite	Quartz	Mica
	In		Pct	Pct	Pct	Pct	Pct	Pct
Leon:[2]								
S45-9-1	0-8	A1	54	18	18	---	10	---
-3	26-36	Bh1	25	33	13	---	29	---
-7	59-80	C	45	0	46	---	9	---
Lynn Haven:[1]								
S16-23-1	0-7	A1	TR	TR	0	0	30	0
-4	21-35	Bh1	0	31	14	0	55	0
-7	62-80	B/C	17	13	32	0	38	0
Mandarin:[1]								
S16-13-1	0-4	A1	85	9	5	0	1	0
-5	30-35	Bh2	0	27	5	0	68	0
-11	73-80	B'h	0	12	5	0	83	0
Mascotte:[1]								
S16-8-1	0-5	A1	0	8	5	0	87	0
-4	15-21	Bh1	0	7	6	0	87	0
-8	28-46	Btg	50	22	24	0	4	0
-10	58-80	Cg	59	18	21	0	2	0
Newhan:[2]								
S45-2-1	0-8	A	73	0	12	---	15	---
-4	55-80	C	66	0	24	---	10	---
Ortega:[1]								
S16-3-1	0-5	A	0	39	0	0	61	0
-2	5-33	C1	0	39	9	0	52	0
-5	63-82	C4	0	48	10	2	40	0
Pelham:[1]								
S16-18-1	0-6	Ap	34	16	15	0	35	0
-6	44-60	Btg3	75	8	11	0	6	0
Penney:[1]								
S16-20-1	0-5	A	0	43	25	0	32	0
-4	30-48	E3	0	41	34	0	25	0
-6	72-80	EB	0	36	42	0	22	0
Pottsburg:[1]								
S16-11-1	0-3	A	TR	36	14	0	50	0
-6	57-80	Bh	TR	12	6	0	82	0
Ridgewood:[2]								
S45-4-1	0-7	Ap	14	54	15	---	17	---
-3	24-29	C1	0	66	19	---	15	---
-6	46-80	C4	17	52	15	---	16	---
Sapelo:[1]								
S16-15-1	0-3	A1	31	0	3	0	66	0
-4	23-30	Bh1	0	39	25	0	36	0
-8	56-62	Btg1	7	36	47	0	10	0
Stockade:[1]								
S16-12-1	0-12	A	76	13	2	0	9	0
-2	12-26	Btg1	86	7	2	0	5	0
-4	36-46	Btg2	82	6	2	0	10	0

See footnotes at end of table.

Table 20.—Clay Mineralogy of Selected Soils—Continued

Soil series and sample numbers	Depth	Horizon	Clay minerals					
			Montmo-rillonite	14-angstrom intergrade	Kaolinite	Gibbsite	Quartz	Mica
	In		Pct	Pct	Pct	Pct	Pct	Pct
Surrency:[1]								
S16-21-1	0-14	A1	TR	28	12	0	60	0
-4	26-38	Btg1	TR	35	25	0	40	0
-6	49-70	Btg3	71	TR	15	0	7	7
-7	70-80	Cg	76	TR	16	0	8	TR
Wesconnett:[1]								
S16-24-1	0-2	A	0	34	3	0	63	0
-2	2-10	Bh1	0	25	2	0	73	0
-3	10-26	Bh2	0	41	2	0	57	0
-4	26-32	Bh3	0	33	3	0	64	0
-5	32-44	E/Bh	0	20	7	0	73	0
-6	44-72	B'h1	0	TR	0	0	50	0
-7	72-80	B'h2	0	0	0	0	0	0
Yonges:[1]								
S16-16-1	0-3	A	61	21	6	0	12	0
-3	6-25	Btg1	91	3	3	0	3	0
-5	31-55	Btg3	79	6	11	0	4	0
-7	65-80	BCg	85	8	5	0	2	0
Yulee:[1]								
S16-25-1	0-7	A1	75	0	8	0	17	0
-2	7-14	A2	86	0	4	0	10	0
-3	14-28	Bg1	94	0	2	0	4	0
-4	28-40	Bg2	---	---	---	---	---	---
-5	40-48	Bg3	95	0	3	0	2	0
-6	48-66	Bg4	95	0	3	0	2	0
-7	66-75	2C	93	0	4	0	3	0
-8	75-80	2Cg	92	0	6	0	2	0

[1] The soil is the typical pedon, as sampled in Duval County, Florida.
[2] The soil is the typical pedon, as sampled in Nassau County, Florida.

Table 21.—Engineering Index Test Data

(Tests were performed by the Florida Department of Transportation (FDOT) in cooperation with the U.S. Bureau of Public Roads, in accordance with standard procedures of the American Association of State Highway and Transportation Officials (AASHTO). See the section "Soil Series and Their Morphology" for the location of pedons sampled. NP means nonplastic. Absence of an entry indicates that data were not estimated)

Soil name, report number, horizon, and depth in inches	FDOT report no.	Classification		Mechanical analysis: Percentage passing sieve--				Mechanical analysis: Percentage smaller than--				Liquid limit	Plasticity index	Moisture density: Maximum dry density	Moisture density: Optimum moisture
		AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm	Pct		Lb/cu ft	Pct
Albany fine sand:[1]															
(S75FL-031-010)															
E ------ 3 to 29	6	A-2-4	SM	100	100	100	13	9	4	0	0	---	NP	100.9	16.0
Btg ----63 to 87	7	A-6	SC	100	100	100	49	44	36	30	28	37	20	104.1	18.7
Blanton fine sand:[1]															
(S75FL-031-014)															
Bt -----54 to 110	13	A-2-4	SM	100	100	100	25	25	22	18	16	---	NP	109.7	17.0
Corolla fine sand:[2]															
(S85FL-089-020)															
A ----- 0 to 6	25	A-3	SP	100	100	98	1	0	0	0	0	NP	NP	98	16
C5 -----41 to 80	26	A-3	SW	100	100	47	1	0	0	0	0	NP	NP	107	14
Evergreen muck:[2]															
(S85FL-089-014)															
E ------17 to 26	16	A-2-4	SM	100	100	100	12	11	10	6	5	NP	NP	107	14
Fripp fine sand:[1]															
(S85FL-031-019)															
C ------ 6 to 90	21	A-3	SP	100	100	100	0	0	0	0	0	---	NP	97.8	17.8
Hurricane fine sand:[2]															
(S84FL-089-011)															
E2 -----10 to 20	12	A-3	SP	100	100	100	4	4	4	0	0	NP	NP	100	16
Kureb fine sand:[2]															
(S85FL-089-019)															
E ------ 5 to 19	24	A-3	SP	100	100	99	3	0	0	0	0	NP	NP	96	17
Leon fine sand:[1]															
(S75FL-031-009)															
Bh1 ----18 to 26	4	A-3	SP-SM	100	100	100	8	4	0	0	0	---	NP	95.5	20.3
Bh2 ----26 to 37	5	A-3	SP	100	100	100	3	3	1	0	0	---	NP	100.3	15.1
Mandarin fine sand:[1]															
(S75FL-031-013)															
E' -----46 to 62	12	A-3	SP	100	100	100	1	0	0	0	0	---	NP	99.7	14.9
Mascotte fine sand:[1]															
(S75FL-031-008)															
Bh1 ----15 to 25	1	A-2-4	SM	100	100	100	15	9	3	0	0	---	NP	92.7	22.3
Btg1 ---28 to 46	2	A-2-4	SM	100	100	100	28	28	22	19	18	---	NP	110.1	16.3
Btg2 ---46 to 58	3	A-2-4	SM	100	100	100	19	18	15	12	11	---	NP	106.3	15.2
Newhan fine sand:[2]															
(S84FL-089-002)															
C ------ 8 to 80	2	A-3	SP	100	100	99	1	0	0	0	0	NP	NP	99	16

See footnotes at end of table.

Table 21.—Engineering Index Test Data—Continued

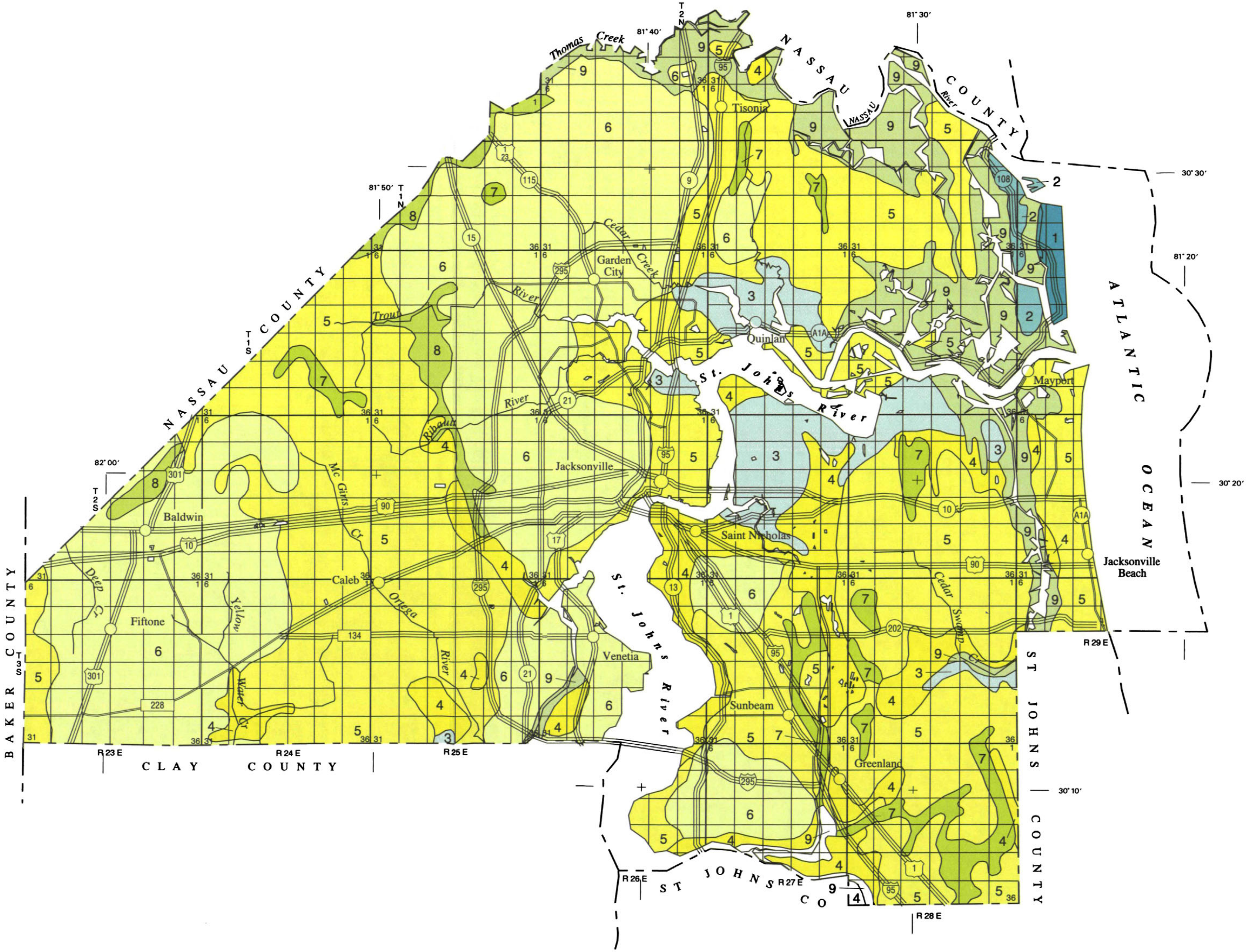
Soil name, report number, horizon, and depth in inches	FDOT report no.	Classification: AASHTO	Classification: Unified	Mechanical analysis, percentage passing sieve--: No. 4	No. 10	No. 40	No. 200	Percentage smaller than--: .05 mm	.02 mm	.005 mm	.002 mm	Liquid limit	Plasticity index	Moisture density: Maximum dry density	Optimum moisture
												Pct		Lb/cu ft	Pct
Ortega fine sand:[2] (S84FL-089-005)															
C1 ----- 6 to 15	5	A-3	SP	100	100	100	6	5	2	0	0	NP	NP	100	14
Pelham fine sand:[1] (S75FL-031-018)															
Btg1 ---21 to 60	20	A-6	SC	100	100	100	36	34	26	22	21	30	11	108.7	16.7
Penney fine sand:[1] (S75FL-031-020)															
EB -----48 to 80	22	A-3	SP-SM	100	100	100	8	5	2	1	0	---	NP	100.3	15.8
Pottsburg fine sand:[1] (S75FL-031-011)															
E2 -----10 to 34	8	A-3	SP-SM	100	100	100	7	5	2	0	0	---	NP	102.2	15.4
Bh -----57 to 80	9	A-3	SP	100	100	100	4	3	2	0	0	---	NP	99.4	15.9
Ridgewood fine sand:[2] (S84FL-089-004)															
Bw ----- 7 to 24	4	A-3	SP	100	100	100	5	4	2	0	0	NP	NP	101	16
Sapelo fine sand:[1] (S75FL-031-015)															
Bh1 ----23 to 32	14	A-3	SP-SM	100	100	100	10	6	1	0	0	---	NP	98.7	16.7
Btg ----56 to 80	15	A-2-4	SM	100	100	100	20	20	18	14	13	---	NP	107.0	17.8
Stockade fine sandy loam:[1] (S75FL-031-012)															
Btg1 ---12 to 26	10	A-2-4	SC	100	100	99	32	32	27	18	15	29	10	105.5	17.7
Cg -----46 to 65	11	A-3	SP	100	100	100	2	2	0	0	0	---	NP	97.4	14.6
Yonges fine sandy loam:[1] (S75FL-031-016)															
Btg1 --- 6 to 25	16	A-6	SC	100	100	97	40	37	28	21	18	26	11	112.2	15.5
Btg3 ---31 to 55	17	A-6	SC	100	100	92	45	42	35	29	26	34	22	111.7	15.8

[1] The soil is the typical pedon, as sampled in Duval County, Florida.
[2] The soil is the typical pedon, as sampled in Nassau County, Florida.

Table 22.—Classification of the Soils

Soil name	Family or higher taxonomic class
Albany	Loamy, siliceous, thermic Grossarenic Paleudults
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Boulogne	Sandy, siliceous, thermic Typic Alaquods
Cornelia	Sandy, siliceous, thermic Arenic Alorthods
Corolla	Thermic, uncoated Aquic Quartzipsamments
Dorovan	Dysic, thermic Typic Medisaprists
Evergreen	Sandy, siliceous, thermic Histic Alaquods
Fripp	Thermic, uncoated Typic Quartzipsamments
Goldhead	Loamy, siliceous, thermic Arenic Endoaqualfs
Hurricane	Sandy, siliceous, thermic Oxyaquic Alorthods
Kershaw	Thermic, uncoated Typic Quartzipsamments
Kureb	Thermic, uncoated Spodic Quartzipsamments
Leon	Sandy, siliceous, thermic Aeric Alaquods
Lynchburg	Fine-loamy, siliceous, thermic Aeric Paleaquults
Lynn Haven	Sandy, siliceous, thermic Typic Alaquods
Mandarin	Sandy, siliceous, thermic Oxyaquic Alorthods
Mascotte	Sandy, siliceous, thermic Ultic Alaquods
Maurepas	Euic, thermic Typic Medisaprists
Newhan	Thermic, uncoated Typic Quartzipsamments
Ortega	Thermic, uncoated Typic Quartzipsamments
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists
Pelham	Loamy, siliceous, thermic Arenic Paleaquults
Penney	Thermic, uncoated Typic Quartzipsamments
Pottsburg	Sandy, siliceous, thermic Grossarenic Alaquods
Ridgewood	Thermic, uncoated Aquic Quartzipsamments
Rutlege	Sandy, siliceous, thermic Typic Humaquepts
Sapelo	Sandy, siliceous, thermic Ultic Alaquods
Stockade	Fine-loamy, mixed, thermic Typic Umbraqualfs
Surrency	Loamy, siliceous, thermic Arenic Umbric Paleaquults
Tisonia	Clayey, montmorillonitic, euic, thermic Terric Sulfihemists
Wesconnett	Sandy, siliceous, thermic Typic Alaquods
Yonges	Fine-loamy, mixed, thermic Typic Endoaqualfs
Yulee	Fine-loamy, mixed, thermic Typic Endoaquolls

NRCS Accessibility Statement



SOIL LEGEND*

SOILS ON DUNES, ON RISES, ON KNOLLS, AND IN FLATWOODS

- 1 Fripp-Corolla-Mandarin
- 2 Cornelia-Mandarin-Leon
- 3 Ortega-Kershaw-Penney

SOILS ON FLATS, IN FLATWOODS, IN DEPRESSIONS, ON RISES, AND ON KNOLLS

- 4 Leon-Hurricane/Ridgewood-Ortega
- 5 Leon-Boulogne-Evergreen/Wesconnett
- 6 Pelham-Mascotte/Sapelo-Surrency

SOILS IN DEPRESSIONS, ON FLATS, ON FLOOD PLAINS, AND IN TIDAL MARSHES

- 7 Stockade-Surrency-Pamlico
- 8 Yulee-Yonges-Surrency
- 9 Tisonia-Maurepas

*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 1997

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCE CONSERVATION SERVICE
in cooperation with
UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, AGRICULTURAL EXPERIMENT STATIONS, AND SOIL SCIENCE DEPARTMENT, AND FLORIDA DEPARTMENT OF AGRICULTURAL AND CONSUMER SERVICES

GENERAL SOIL MAP

DUVAL COUNTY, FLORIDA

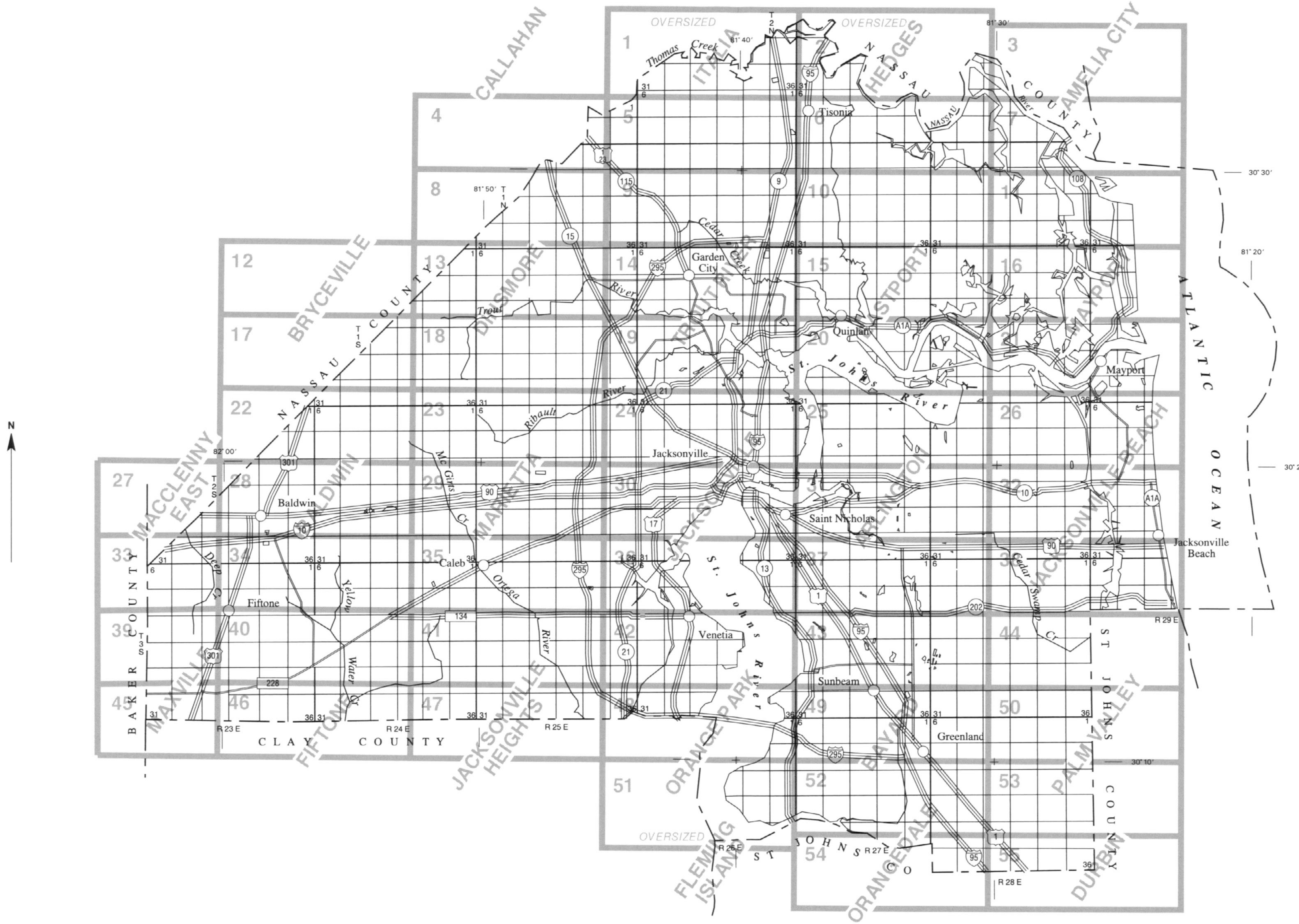
Scale 1:253440

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

Original text from each map sheet:
"This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1983 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned."



SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

INDEX TO MAP SHEETS

DUVAL COUNTY, FLORIDA

Scale 1:253440

MILES

KILOMETERS

SOIL LEGEND

Map symbols consist of numbers only.

SYMBOL	NAME
2	Albany fine sand, 0 to 5 percent slopes
6	Aquic Quartzipsamments, 0 to 2 percent slopes
7	Arents, nearly level
9	Arents, sanitary landfill
10	Beaches, very frequently flooded
12	Blanton fine sand, 0 to 6 percent slopes
14	Boulogne fine sand, 0 to 2 percent slopes
18	Corolla fine sand, gently undulating to rolling, rarely flooded
19	Cornelia fine sand, 0 to 5 percent slopes
22	Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes
23	Fripp-Corolla, rarely flooded, complex, gently undulating to hilly
24	Hurricane and Ridgewood soils, 0 to 5 percent slopes
25	Kershaw fine sand, 2 to 8 percent slopes
26	Kershaw fine sand, smoothed, 0 to 2 percent slopes
29	Kureb fine sand, 2 to 8 percent slopes
31	Kureb fine sand, rolling, 8 to 20 percent slopes
32	Leon fine sand, 0 to 2 percent slopes
33	Leon fine sand, 0 to 2 percent slopes, very frequently flooded
35	Lynn Haven fine sand, 0 to 2 percent slopes
36	Mandarin fine sand, 0 to 2 percent slopes
38	Mascotte fine sand, 0 to 2 percent slopes
40	Maurepas muck, 0 to 1 percent slopes, frequently flooded
42	Newhan-Corolla, rarely flooded, complex, gently undulating to hilly, 2 to 20 percent slopes
44	Mascotte-Pelham complex, 0 to 2 percent slopes
46	Ortega fine sand, 0 to 5 percent slopes
49	Pamlico muck, depressional, 0 to 1 percent slopes
50	Pamlico muck, 0 to 2 percent slopes, frequently flooded
51	Pelham fine sand, 0 to 2 percent slopes
53	Penney fine sand, 0 to 5 percent slopes
55	Pits
56	Pottsburg fine sand, 0 to 2 percent slopes
58	Pottsburg fine sand, high, 0 to 3 percent slopes
62	Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded
63	Sapelo fine sand, 0 to 2 percent slopes
66	Surrency loamy fine sand, depressional, 0 to 2 percent slopes
67	Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded
68	Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded
69	Urban land
71	Urban land-Leon-Boulogne complex, 0 to 2 percent slopes
72	Urban land-Ortega-Kershaw complex, 0 to 8 percent slopes
73	Urban land-Mascotte-Sapelo complex, 0 to 2 percent slopes
74	Pelham-Urban land complex, 0 to 2 percent slopes
75	Urban land-Hurricane-Albany complex, 0 to 5 percent slopes
78	Yonges fine sandy loam, 0 to 2 percent slopes
79	Yulee clay, 0 to 2 percent slopes, frequently flooded
80	Goldhead, wet, and Lynn Haven soils, 2 to 5 percent slopes
81	Stockade fine sandy loam, depressional, 0 to 2 percent slopes
82	Pelham fine sand, depressional, 0 to 2 percent slopes
86	Yulee clay, depressional, 0 to 2 percent slopes
87	Dorovan muck, depressional, 0 to 2 percent slopes
88	Lynchburg fine sand, 0 to 2 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

County or parish

Land grant

Field sheet matchline and neatline

AD HOC BOUNDARY (label)

Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER (sections and land grants)

ROAD EMBLEM & DESIGNATIONS

Interstate 173

Federal 287

State 52

Other 1283

LEVEES

Without road

PITS

Gravel pit

Mine or quarry

WATER FEATURES

DRAINAGE

Perennial, double line

Perennial, single line

Intermittent

Drainage end

LAKES, PONDS AND RESERVOIRS

Perennial

MISCELLANEOUS WATER FEATURES

Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

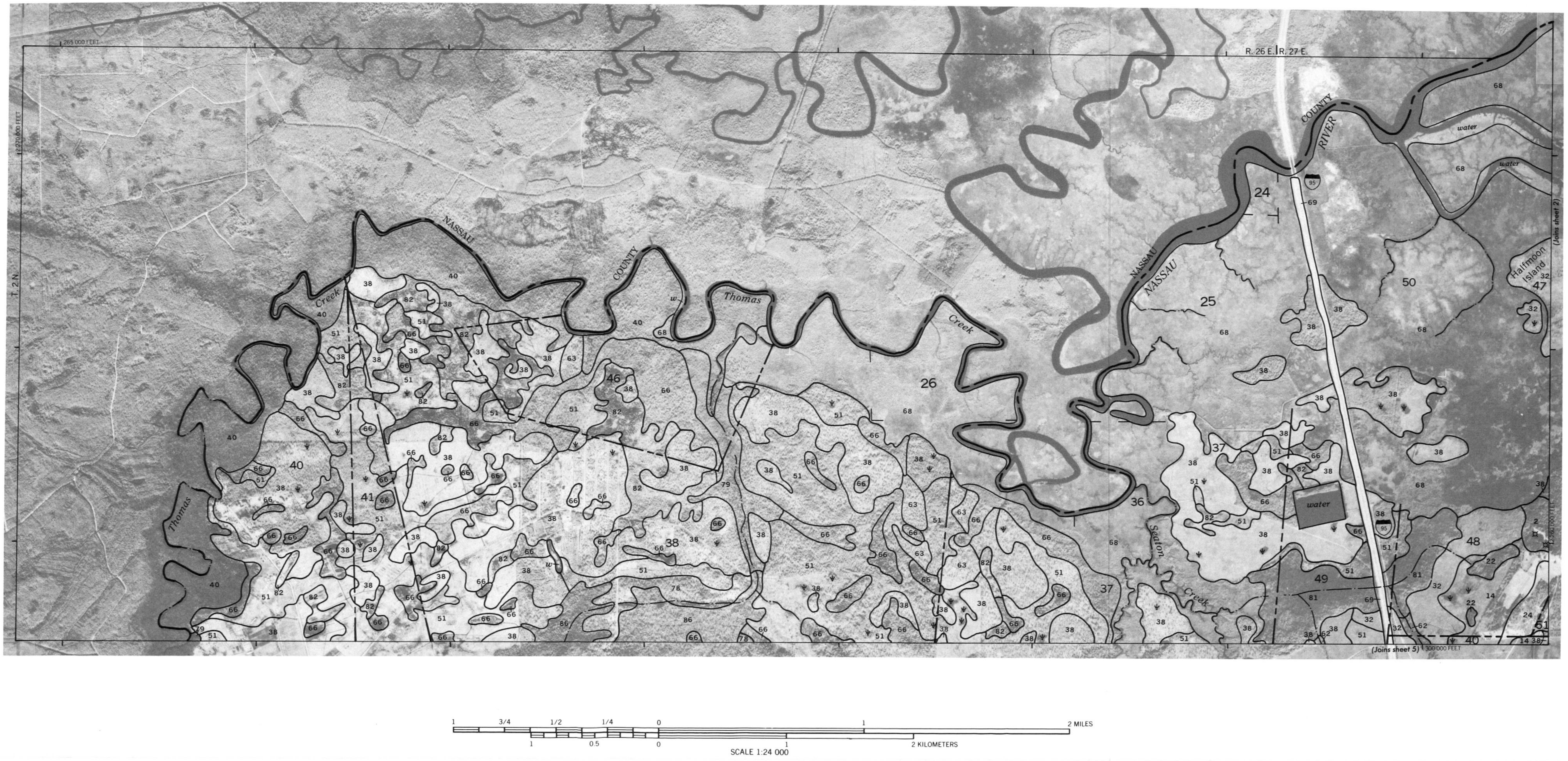
SOIL DELINEATIONS AND SYMBOLS 14 22

SOIL SAMPLE (normally not shown)

MISCELLANEOUS

Ponds, less than 3 acres in size

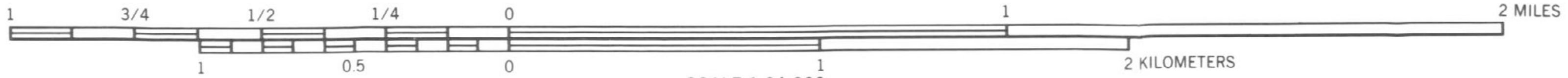
SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 1



SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 2

2

N



SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 3

3

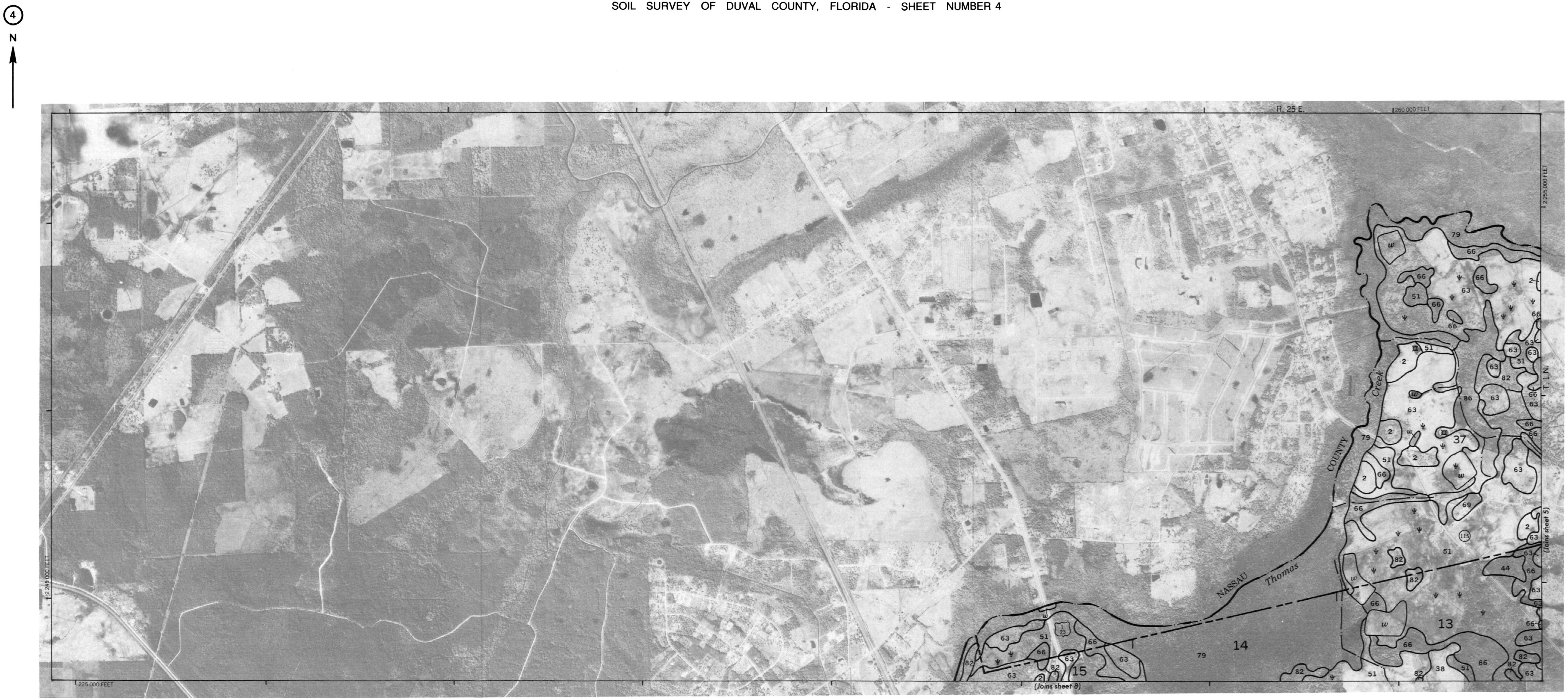
N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

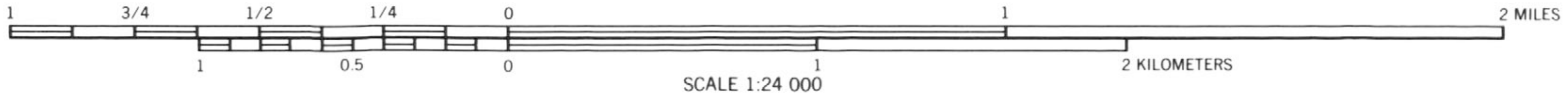
SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 4



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

5

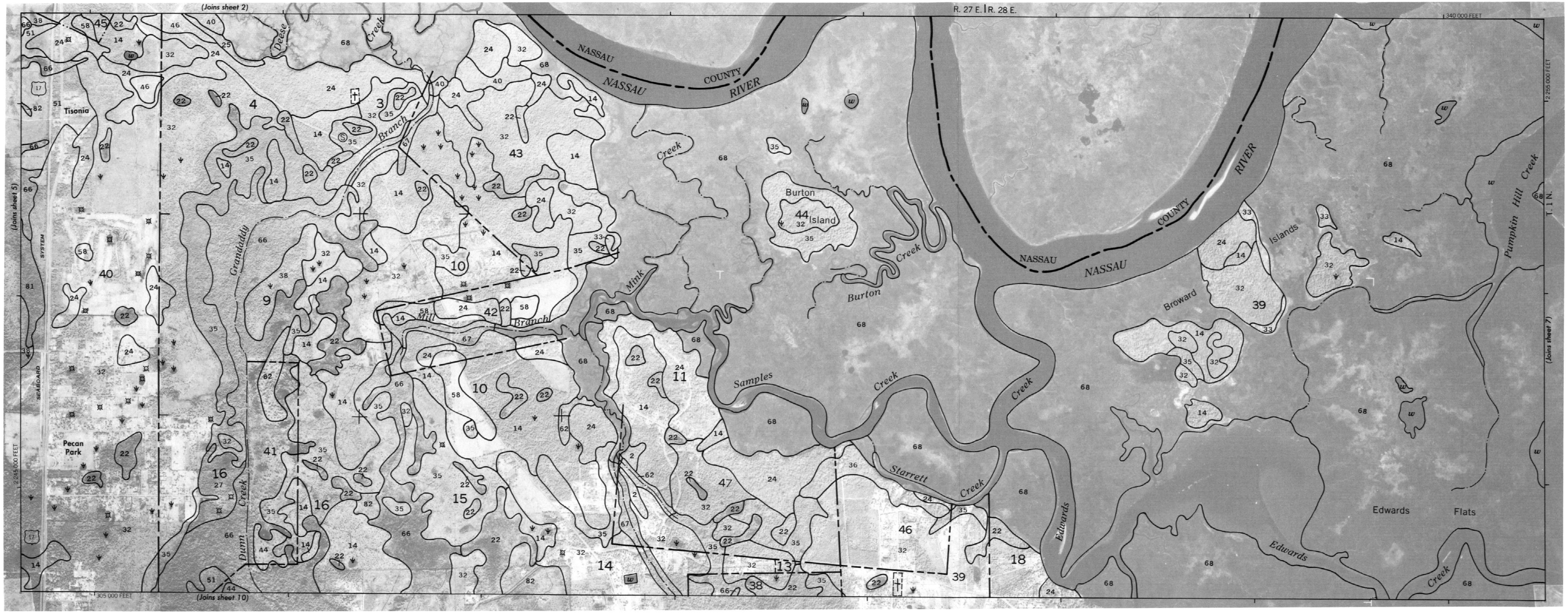
N



SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 6



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000


N
R. 28 E.
(Joins sheet 3)
345 000 FEET
2 255 000 FEET
T. 1 N.
(Joins sheet 6)
(Joins sheet 11)
380 000 FEET
2 245 000 FEET
NASSAU
NASSAU RIVER
COUNTY
NASSAU SOUND
Pumpkin Hill Creek
BLACK HAMMOCK ISLAND
INTRACOASTAL WATERWAY
Sawpit Creek
Talbot Island
Edwards Flats
Tiger Point
A1A
1
3/4
1/2
1/4
0
1
2 MILES
1
0.5
0
1
2 KILOMETERS
SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 8

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 9

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 10

N

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 11

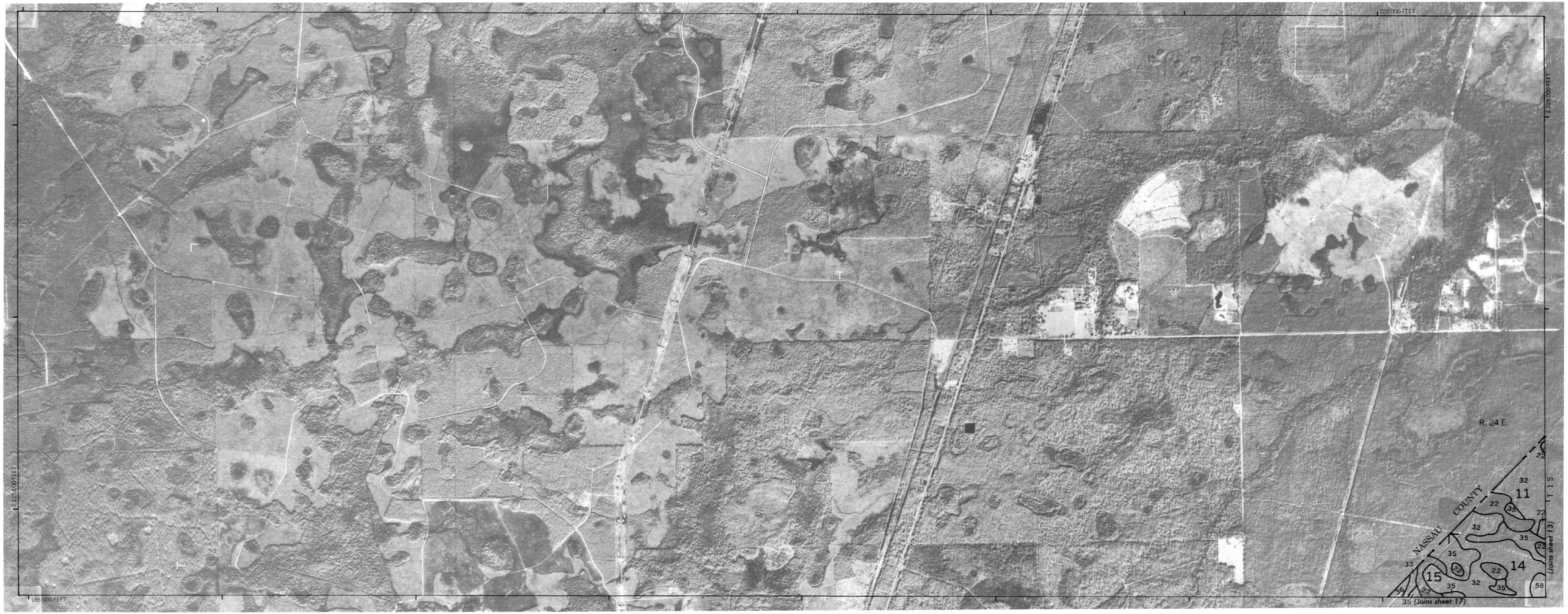
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 12

N



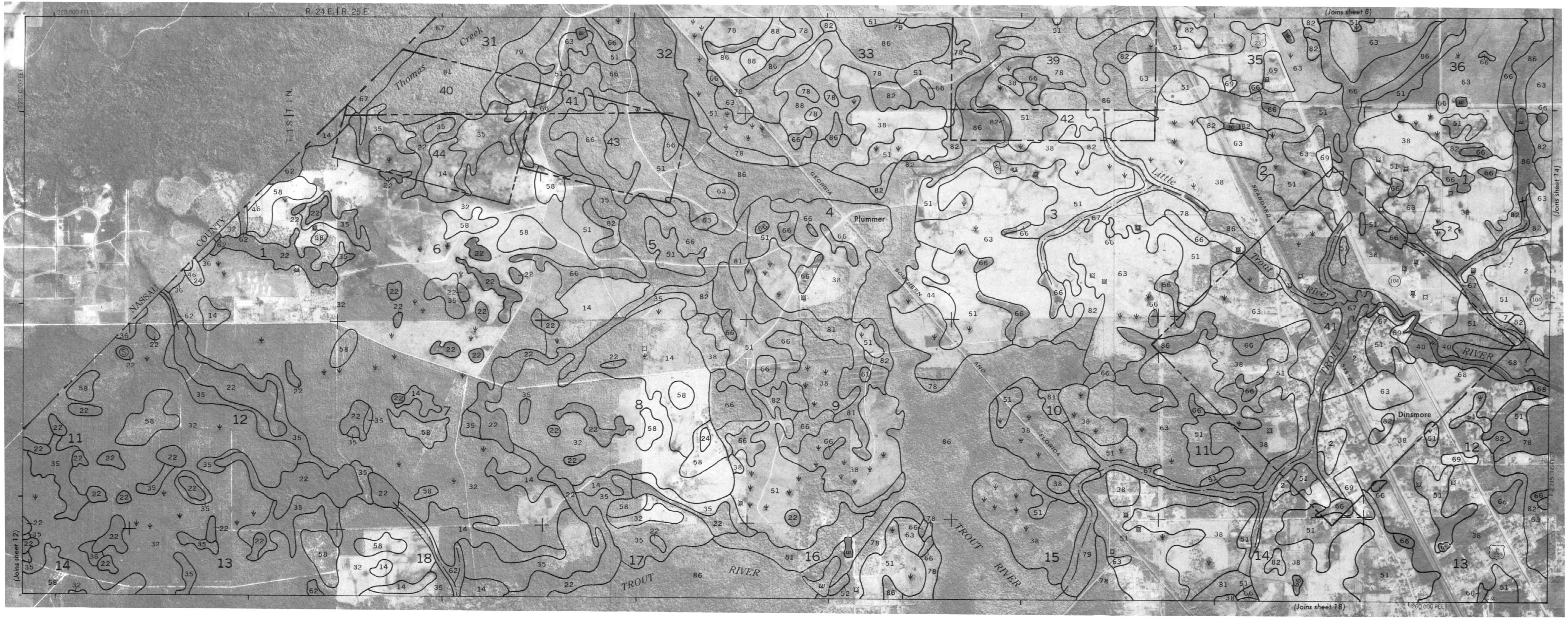
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 2 KILOMETERS

SCALE 1:24 000

13

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 14

15

N

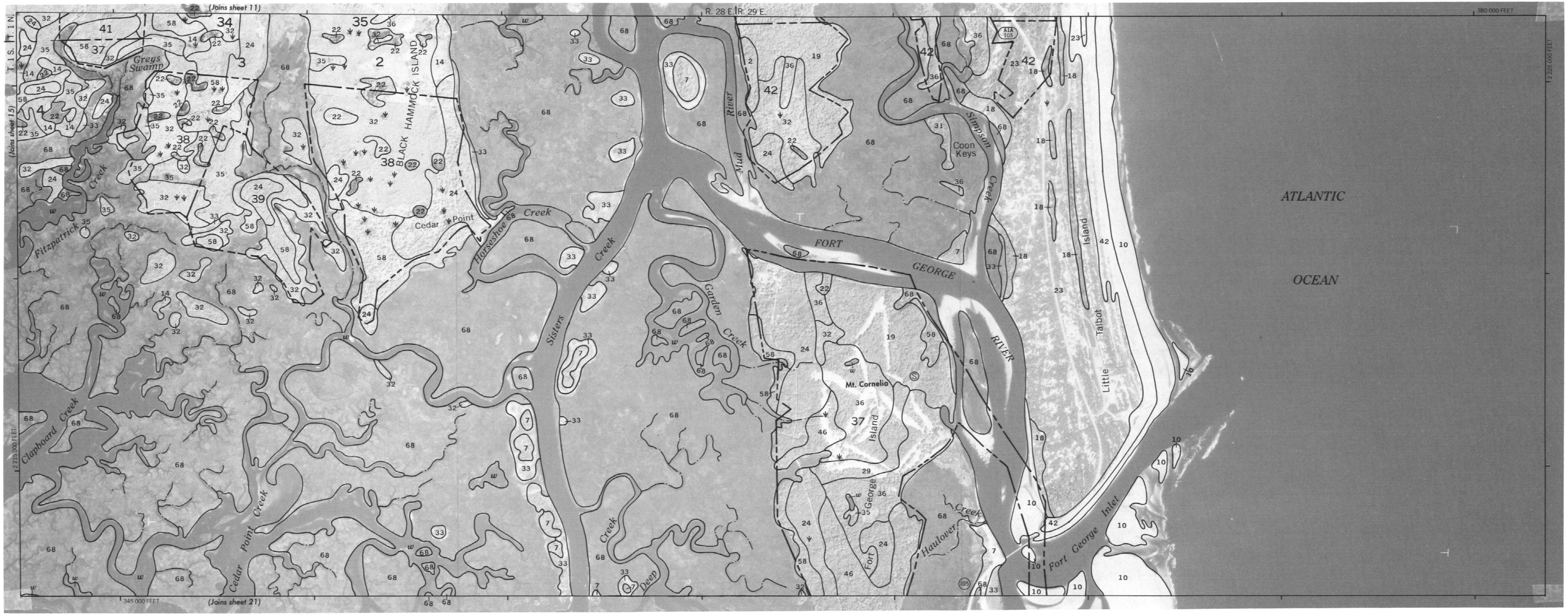
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 16



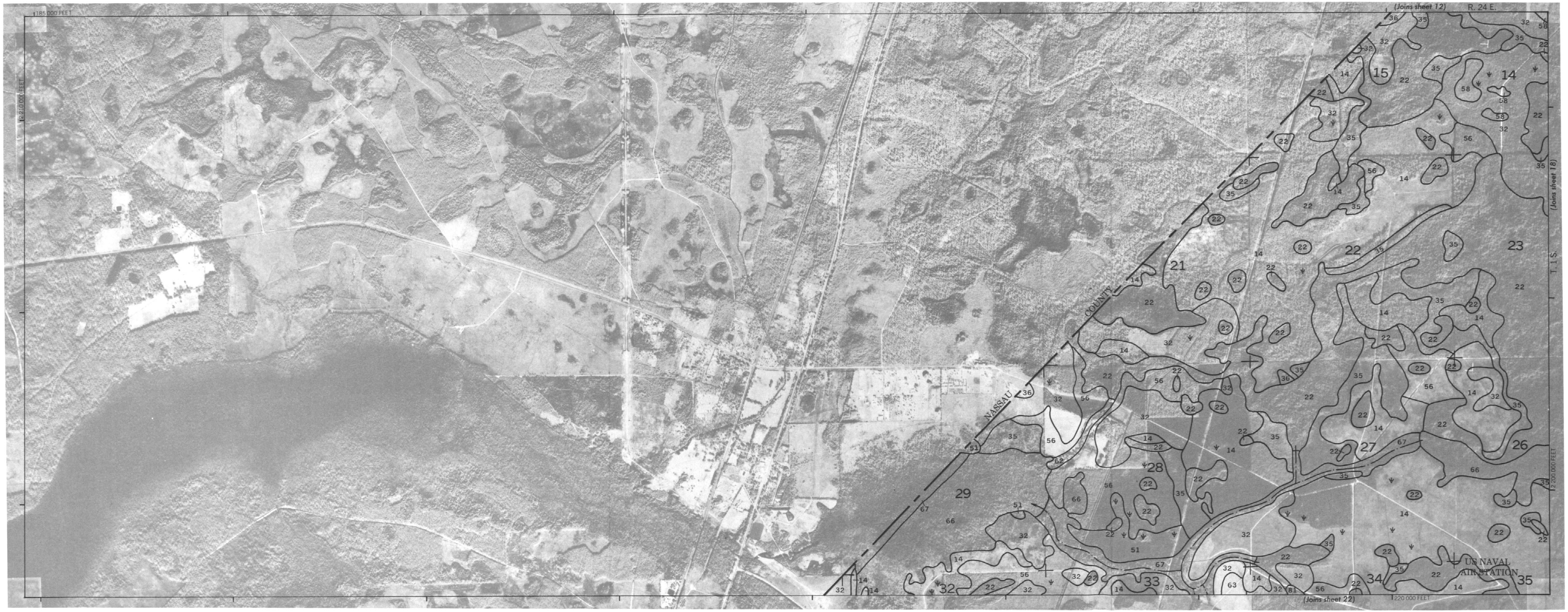
1 3/4 1/2 1/4 0 1 2 MILES

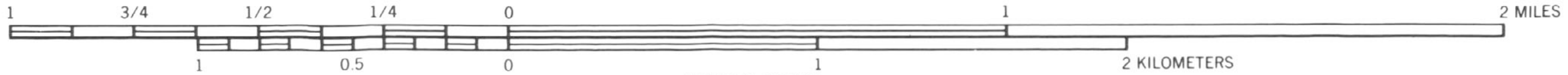
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

17

N

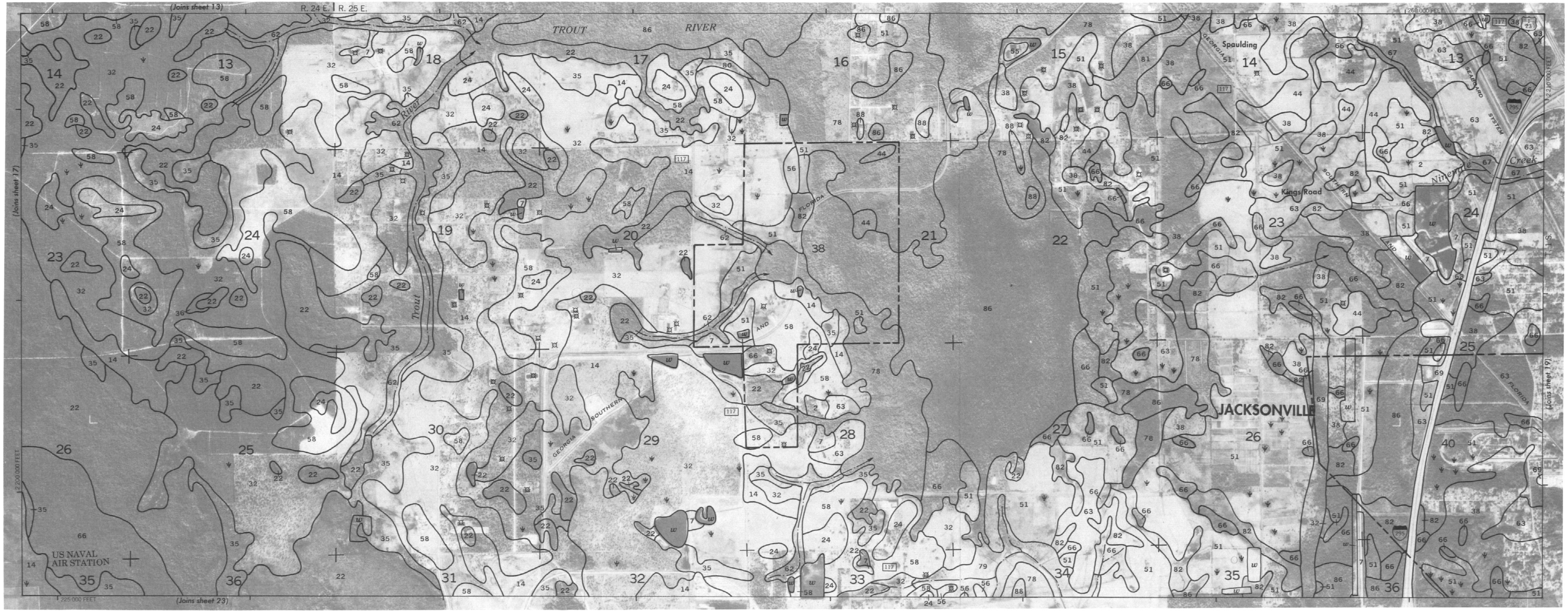




SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 18

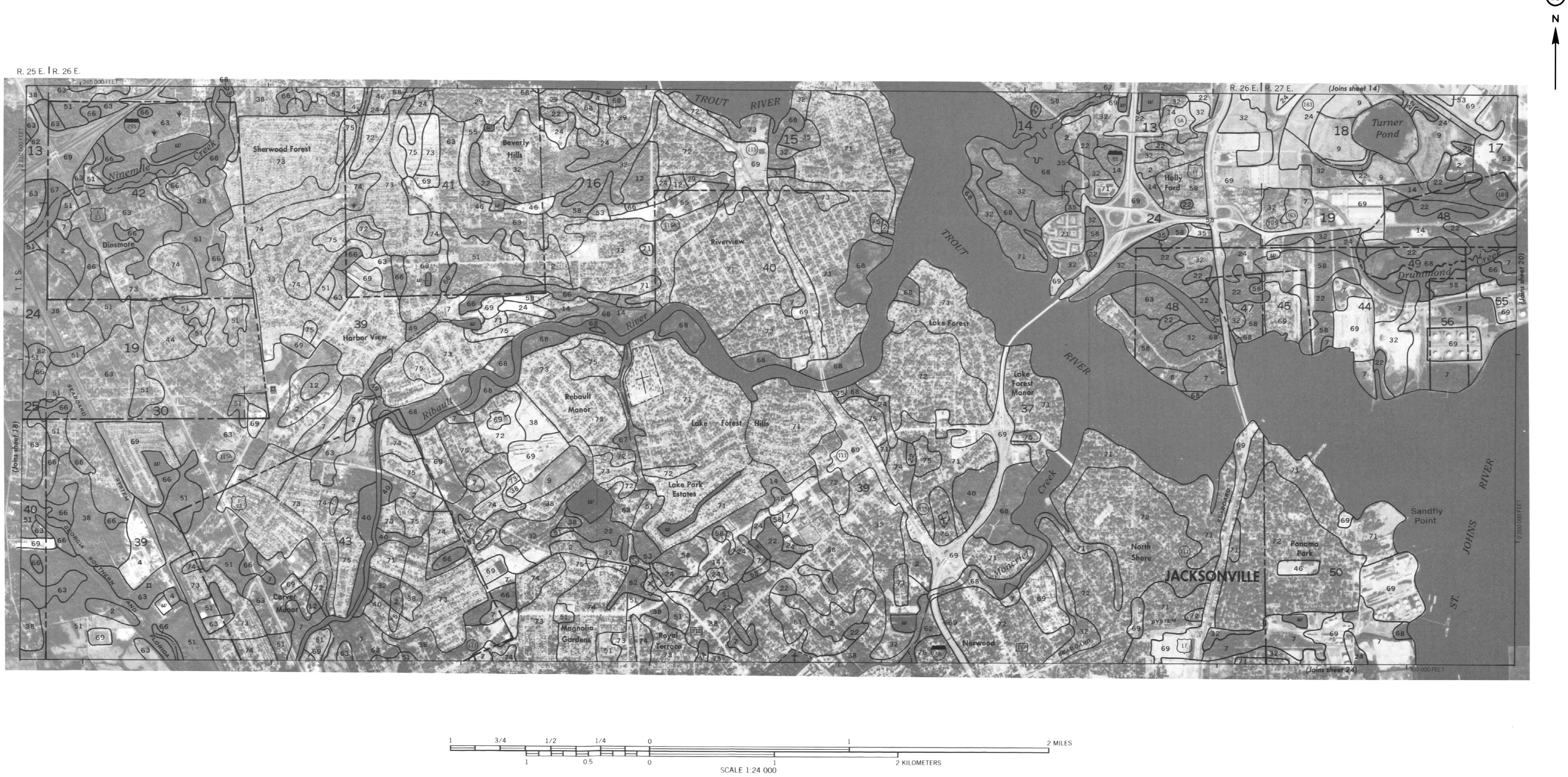
N



1 3/4 1/2 1/4 0 1 2 MILES

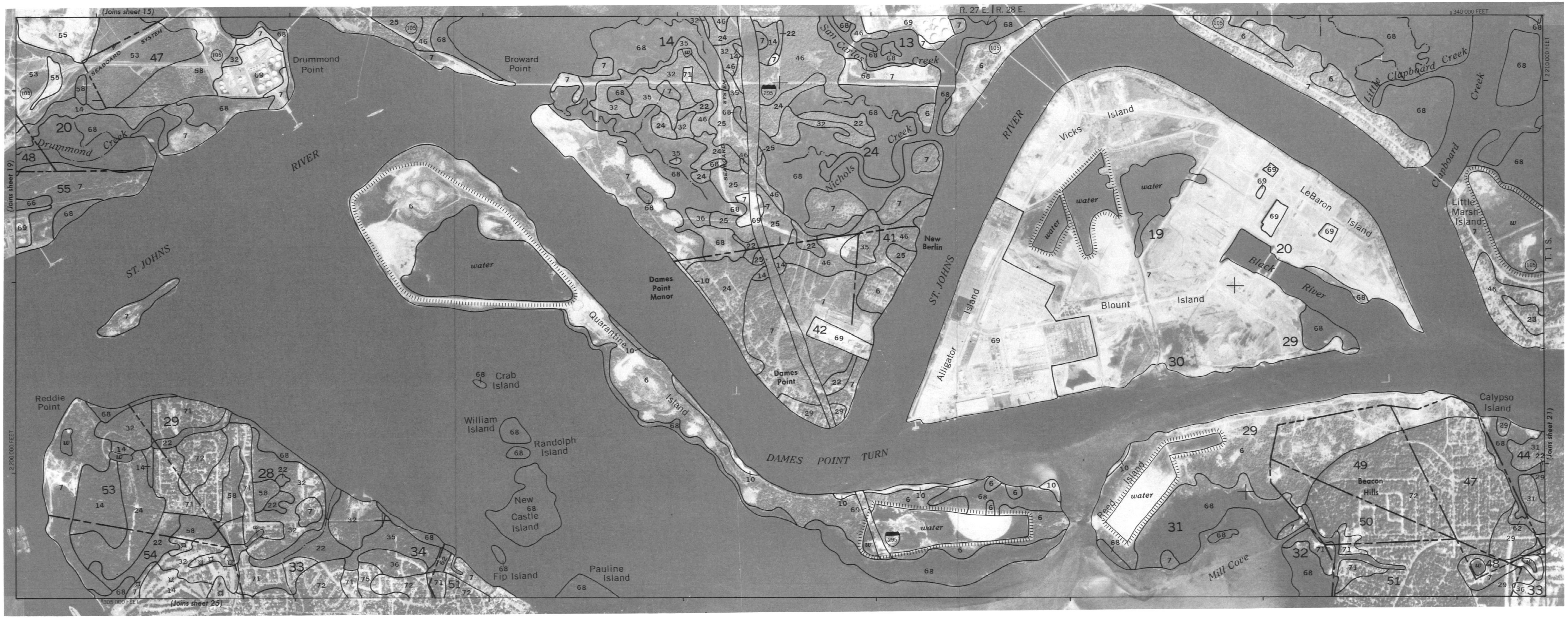
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000


19
N
R. 25 E. R. 26 E.
R. 26 E. R. 27 E.
(Joins sheet 14)
(Joins sheet 18)
(Joins sheet 20)
(Joins sheet 24)
T. 1 S.
Sherwood Forest
Beverly Hills
Ninemile Creek
Dinsmore
Harbor View
Riverview
Trout River
Lake Forest
Lake Forest Manor
Rebault Manor
Lake Forest Hills
Lake Park Estates
Ribault River
Holly Ford
Turner Pond
Drummond Creek
Carver Manor
Magnolia Gardens
Royal Terrace
Norwood
Moncrief Creek
North Shore
JACKSONVILLE
Panama Park
Sandfly Point
St. Johns River
Seaboard
Georgia Southern and Florida System
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

20

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 20



1 3/4 1/2 1/4 0 1 2 MILES

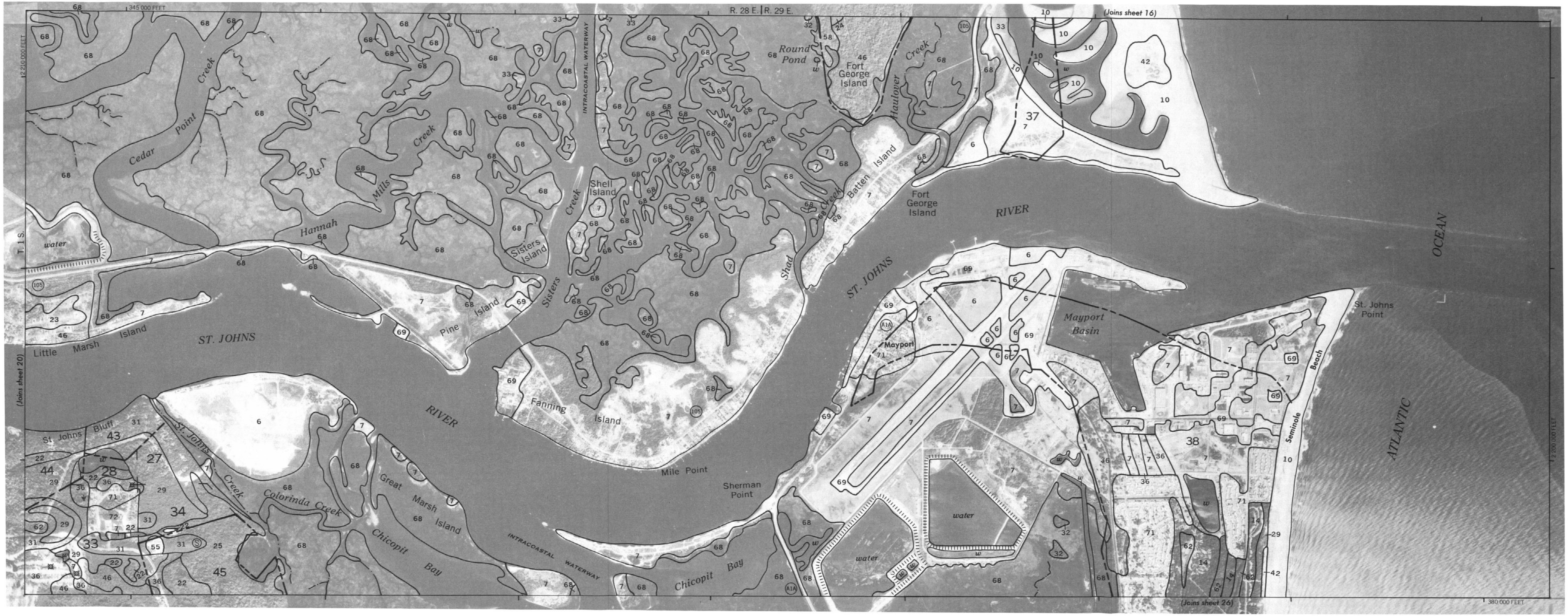
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 21

21

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 22

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

23

N

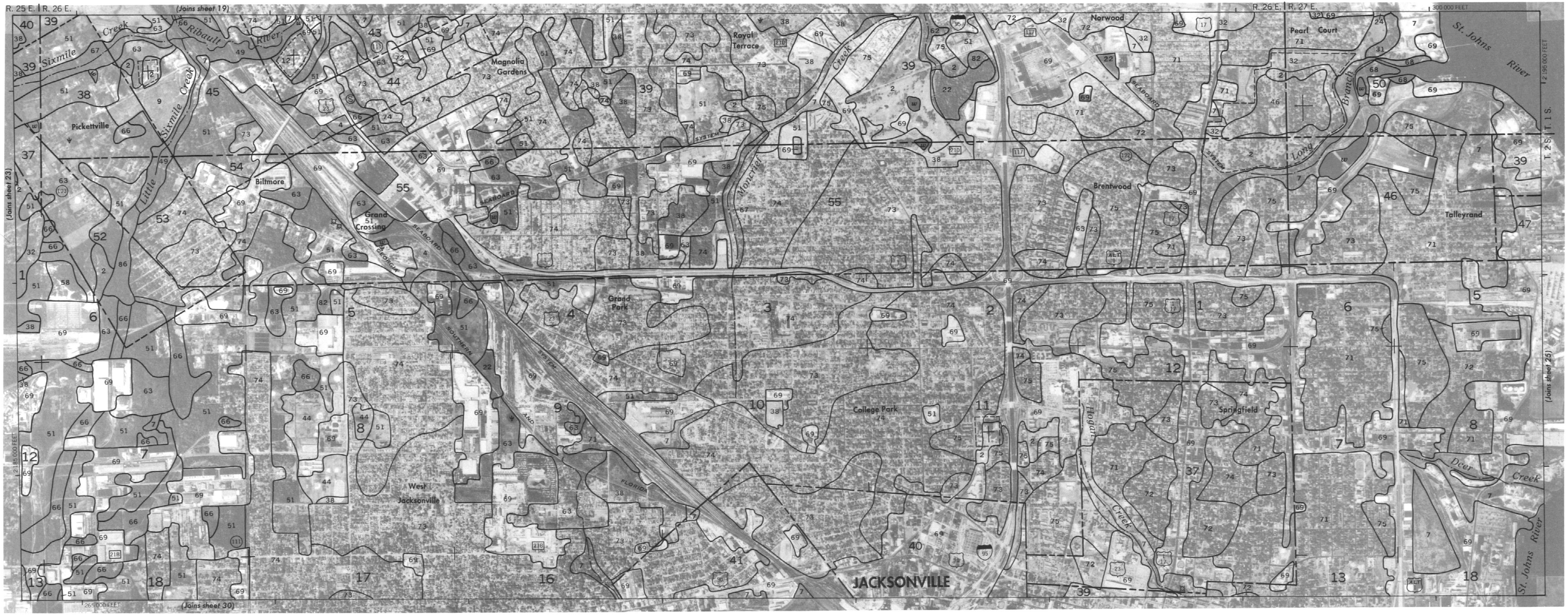
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 24

N



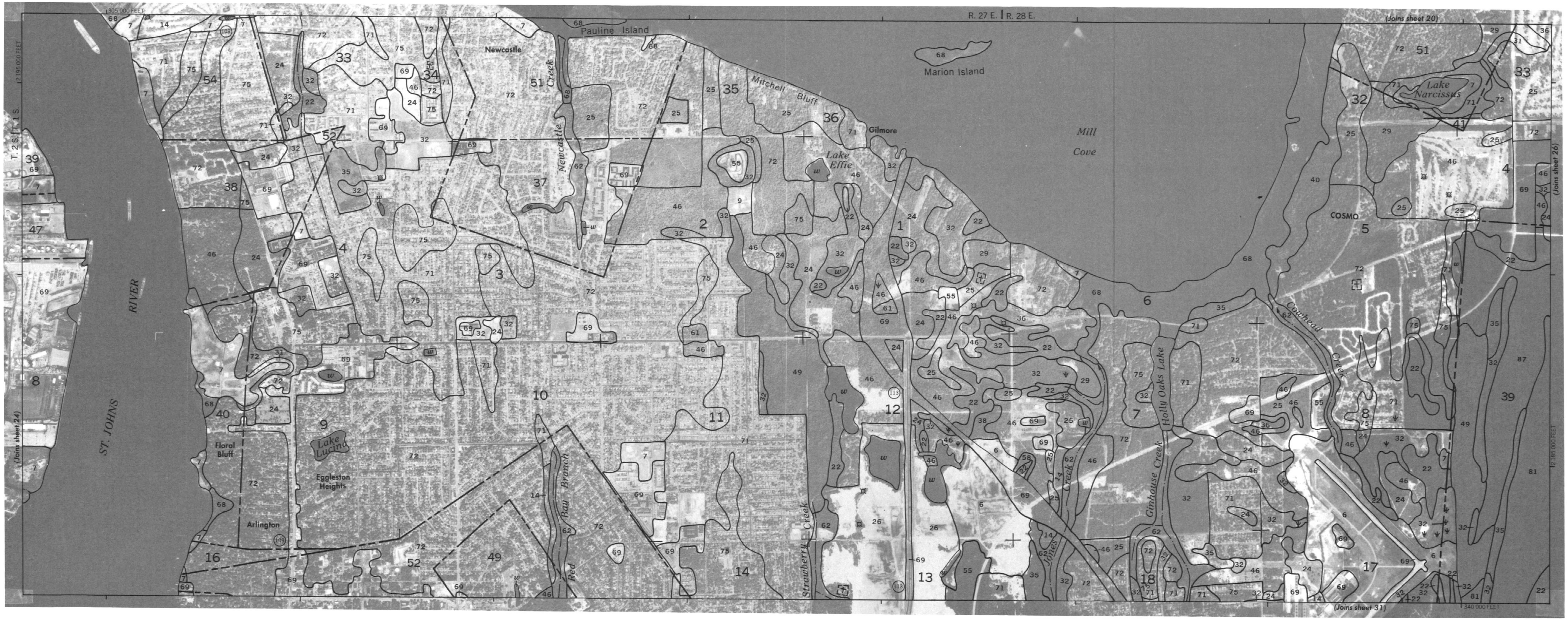
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

25

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 26

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

27

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 28

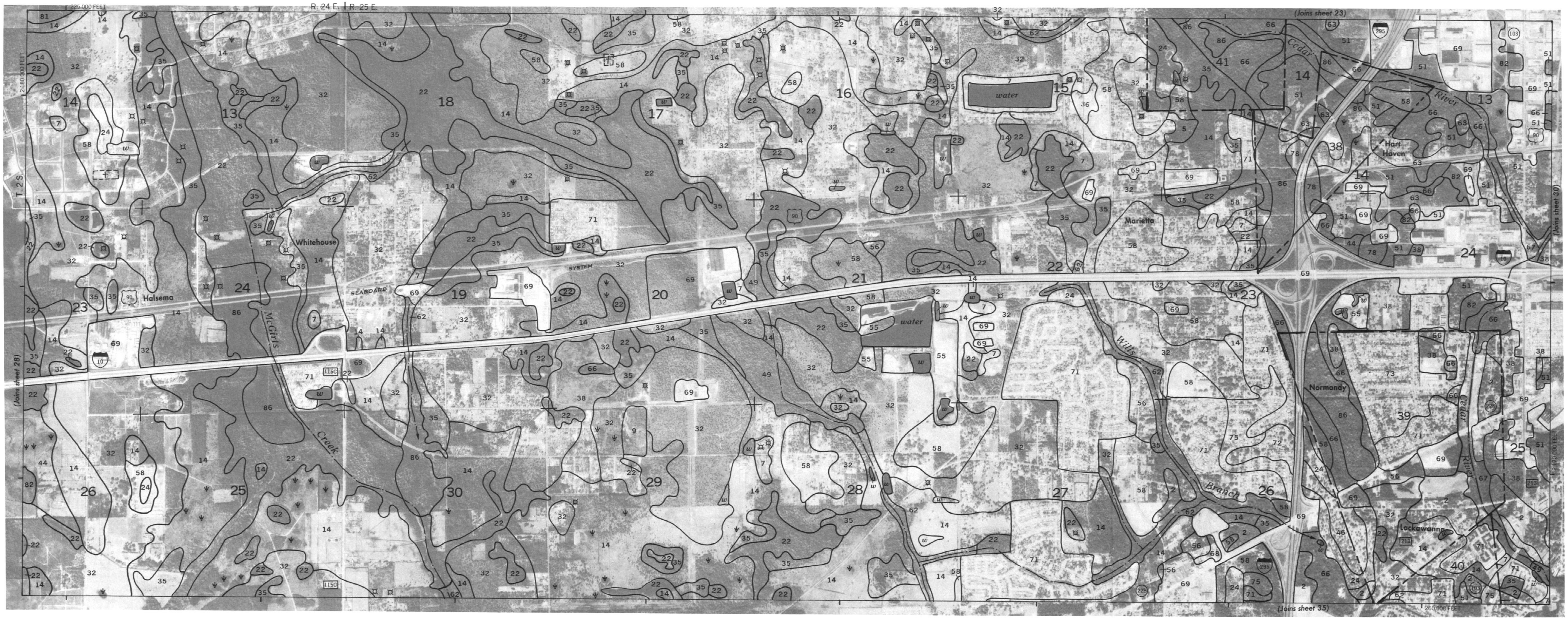
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

29

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

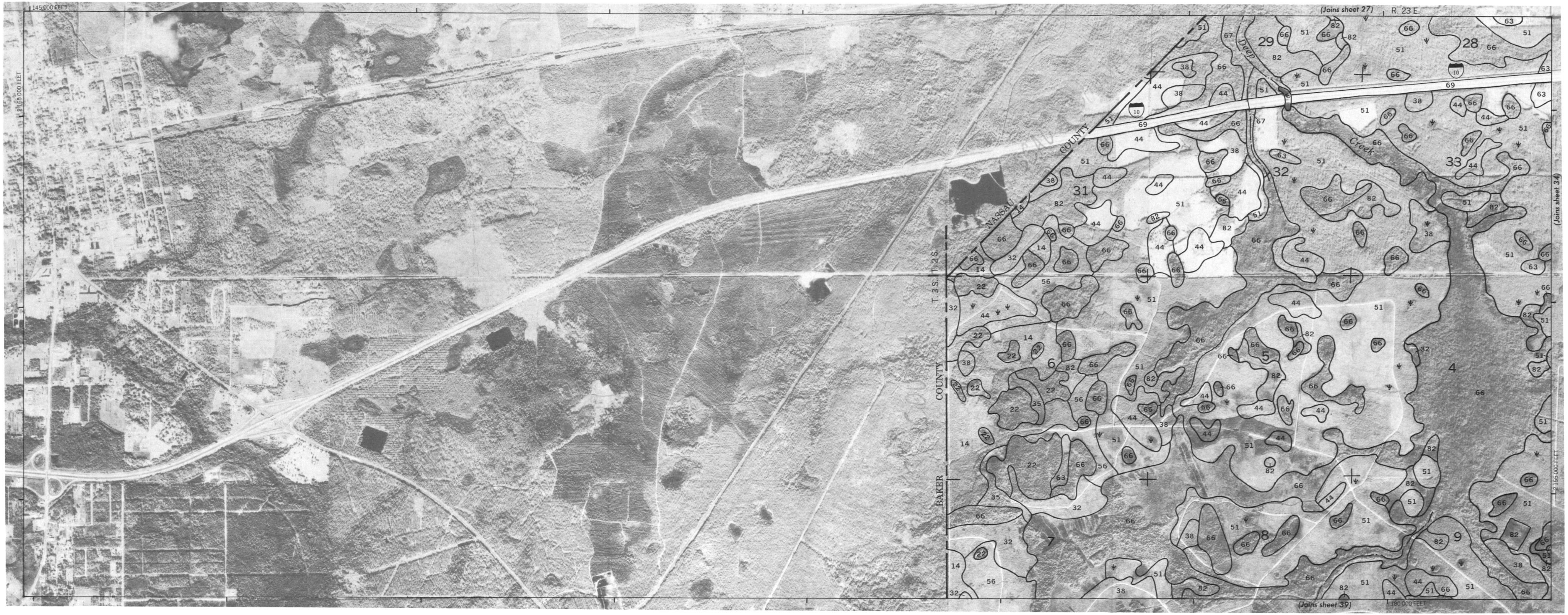
SCALE 1:24 000


N
(Joins sheet 24)
(Joins sheet 29)
(Joins sheet 31)
(Joins sheet 36)
R. 25 E. R. 26 E.
R. 26 E. R. 27 E.
T. 2 S.
JACKSONVILLE
West Jacksonville
Murray Hill
Avondale
Riverside
Brooklyn
Normandy
San Marco
South Jacksonville
St. Nicholas
Hendricks Point
Winter Point
Commodore Point
ST. JOHNS RIVER
McCoy Creek
Big Fishweir Creek
Little Fishweir Creek
Craig Creek
Marco Lake
SEABOARD SYSTEM
FLORIDA EAST COAST
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000


N
(Joins sheet 26)
R. 28 E. R. 29 E.
(Joins sheet 31)
(Joins sheet 38)
Kestner Creek
Crying Child Island
Pablo Creek
Hogpen Creek
Holiday Harbor
Seven Pines Island
Hopkins Creek
San Pablo
CEDAR SWAMP
ATLANTIC BEACH
Lake Neptune
NEPTUNE BEACH
JACKSONVILLE BEACH
ATLANTIC OCEAN
T. 2 S.
SCALE 1:24 000
2 MILES
2 KILOMETERS

N

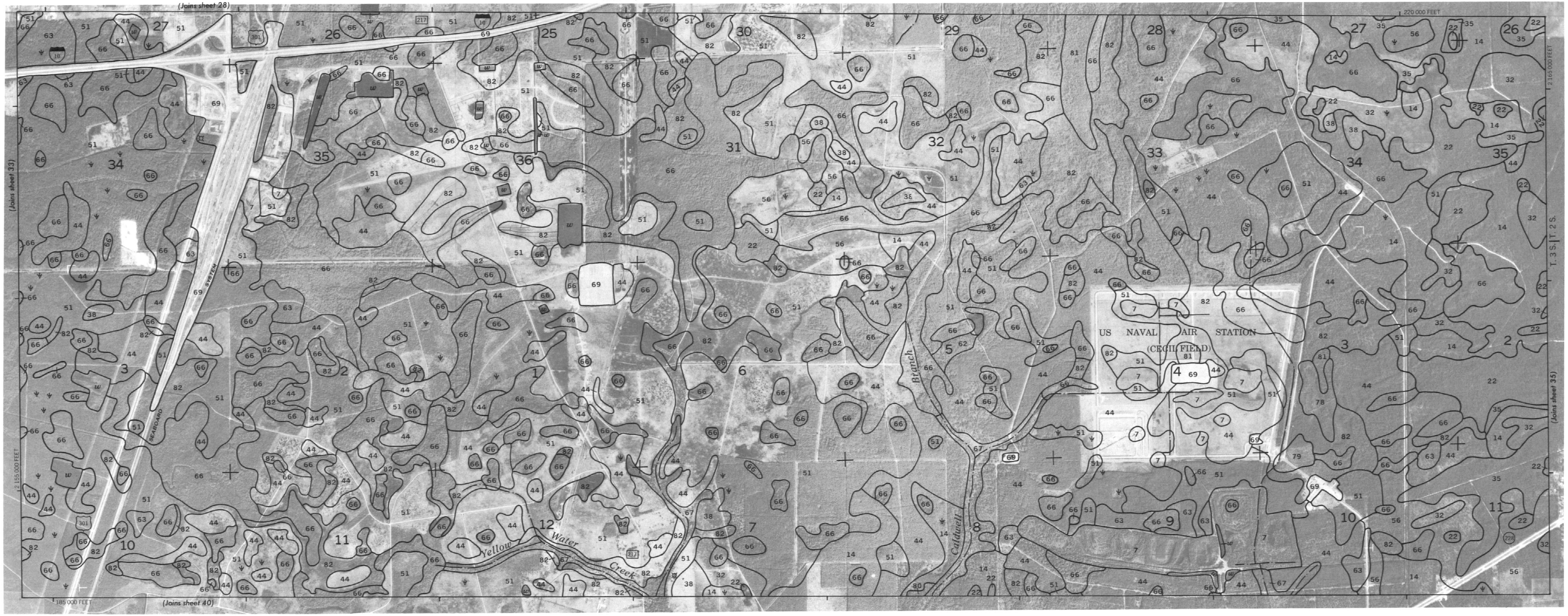


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

R. 23 E. | R. 24 E.



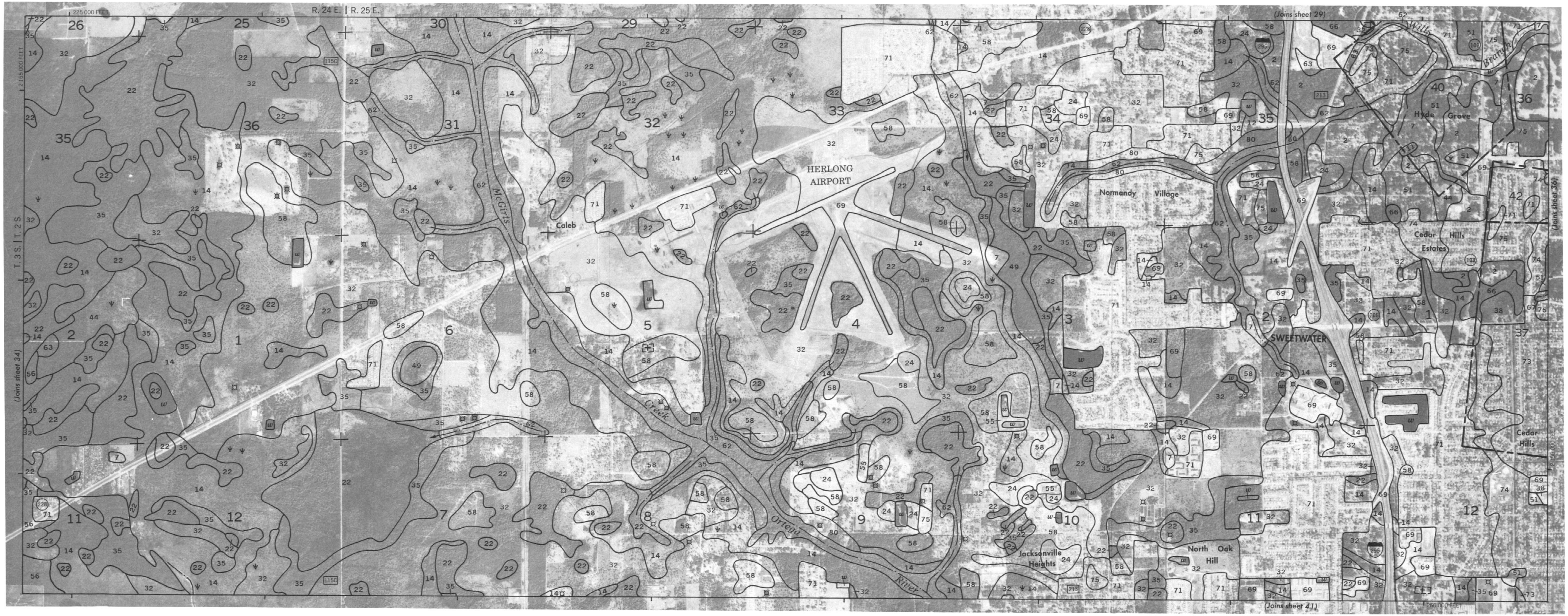
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

35

N

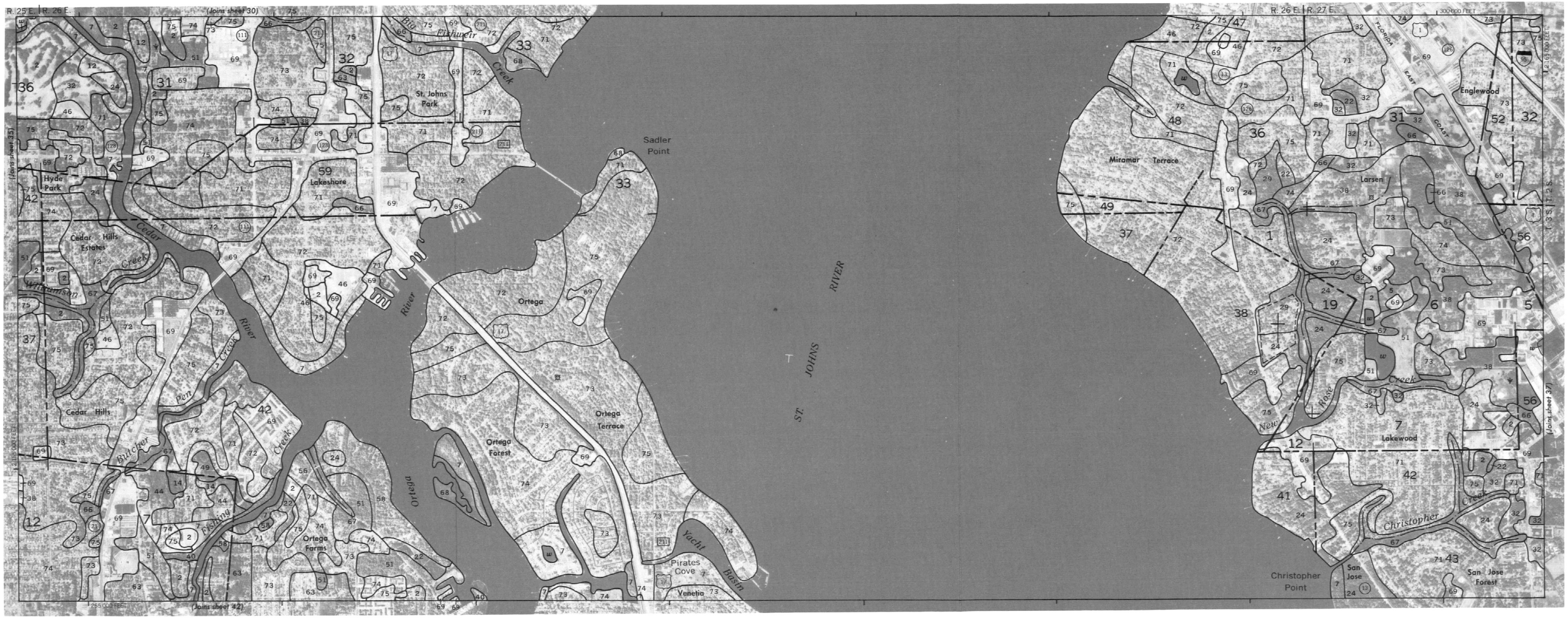


1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N



1 3/4 1/2 1/4 0 1 2 MILES

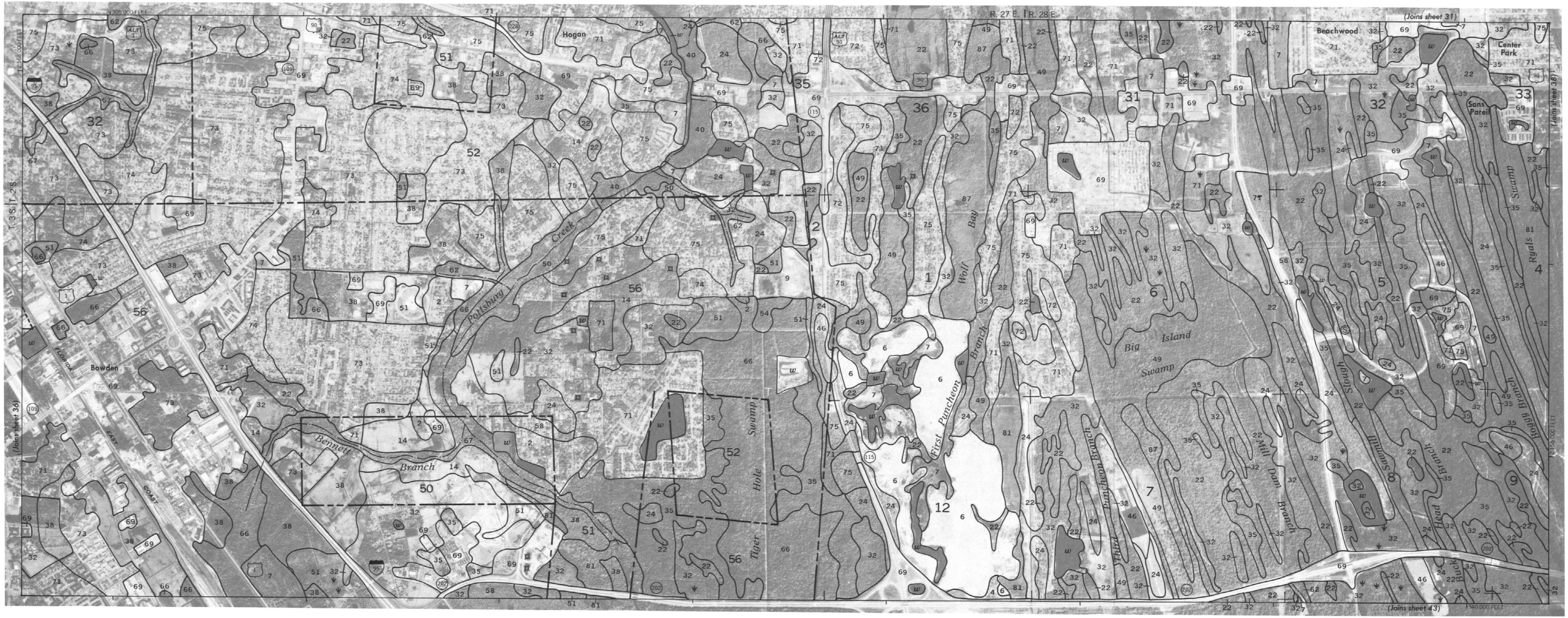
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 37

37

N



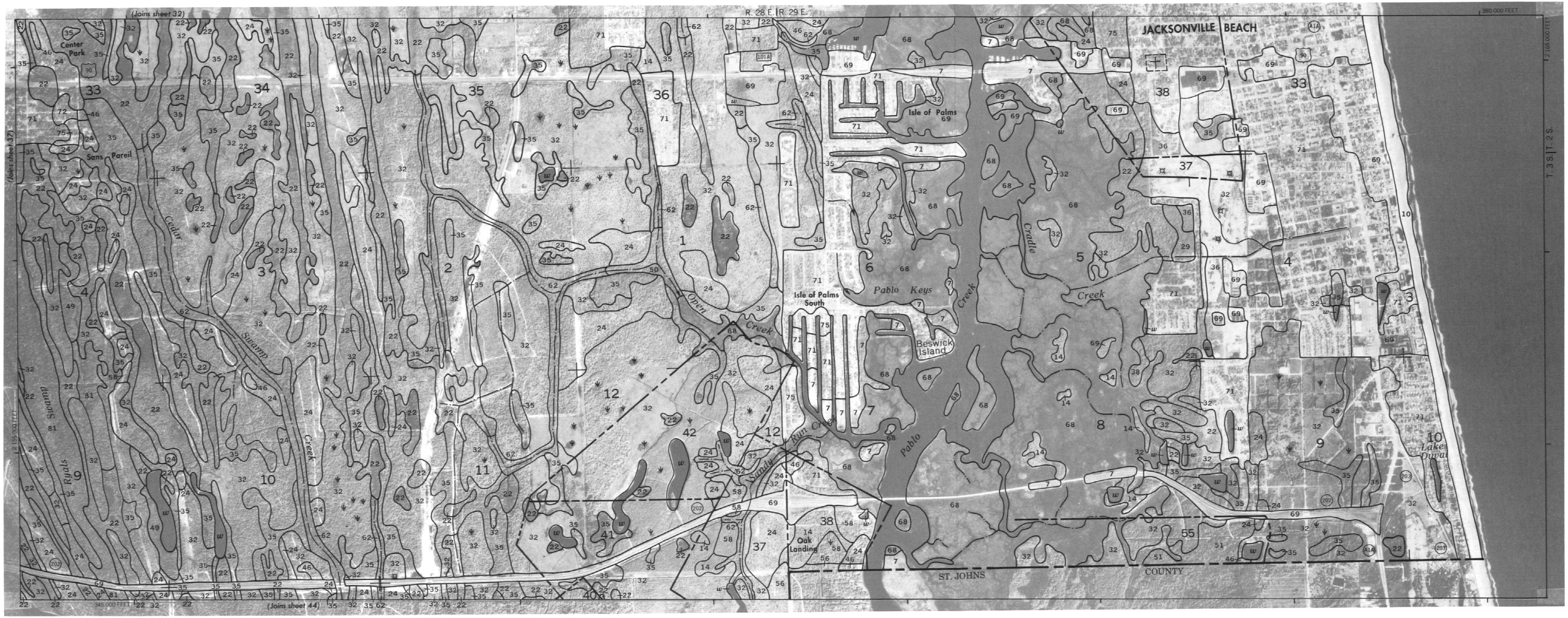
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 38

N



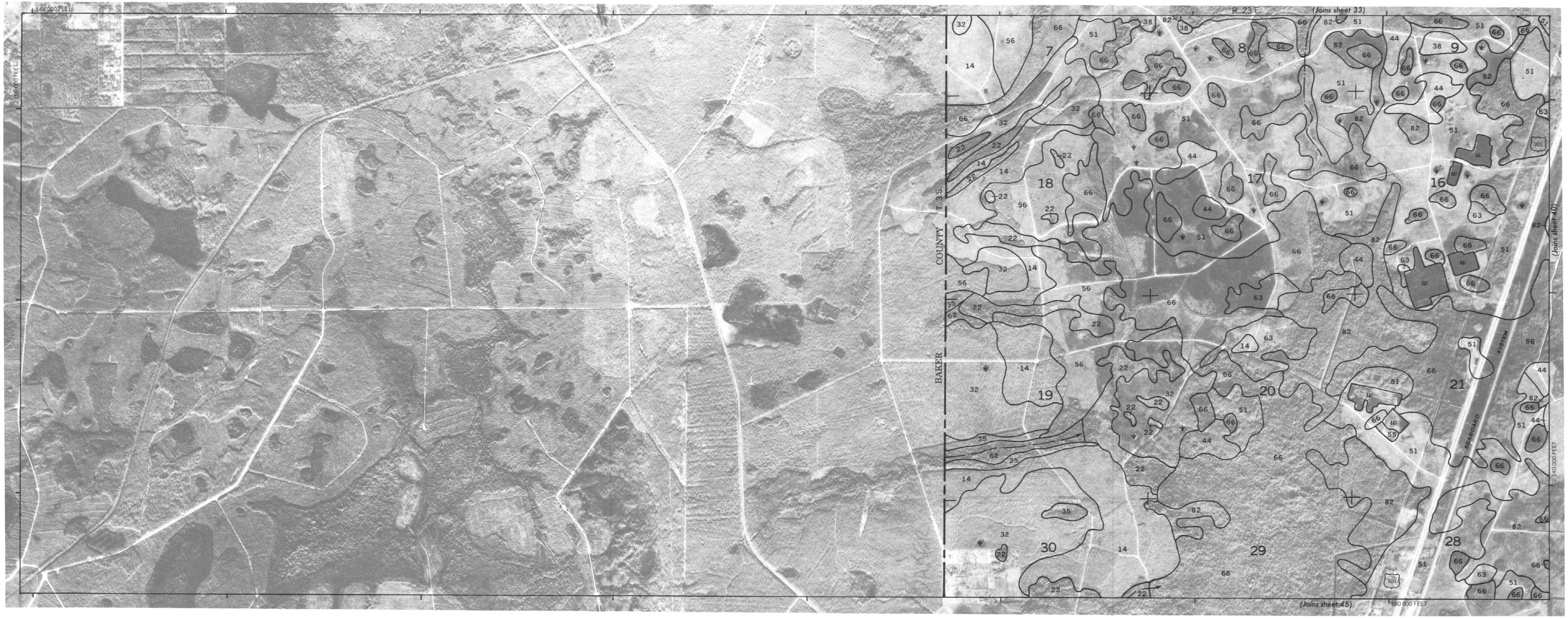
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

39

N



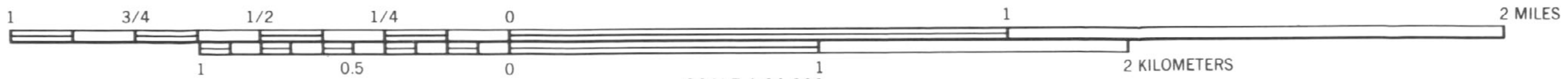
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 40

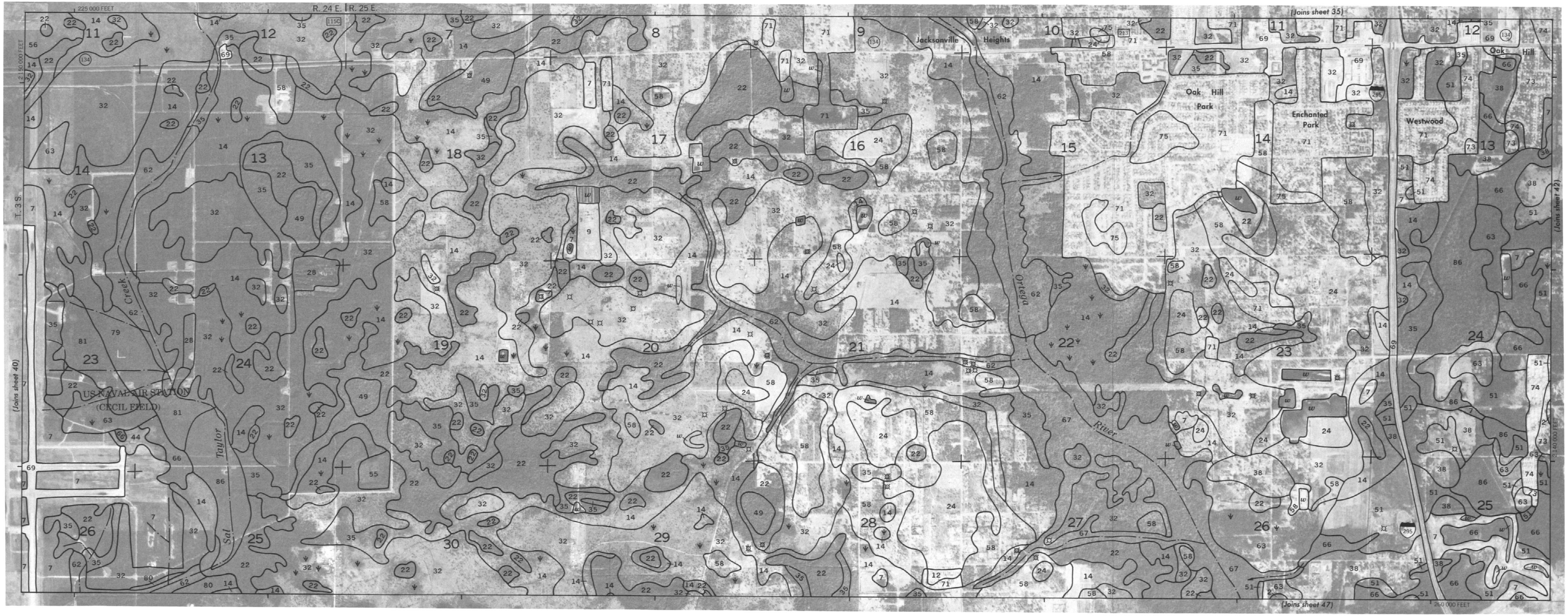
N



SCALE 1:24 000

41

N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

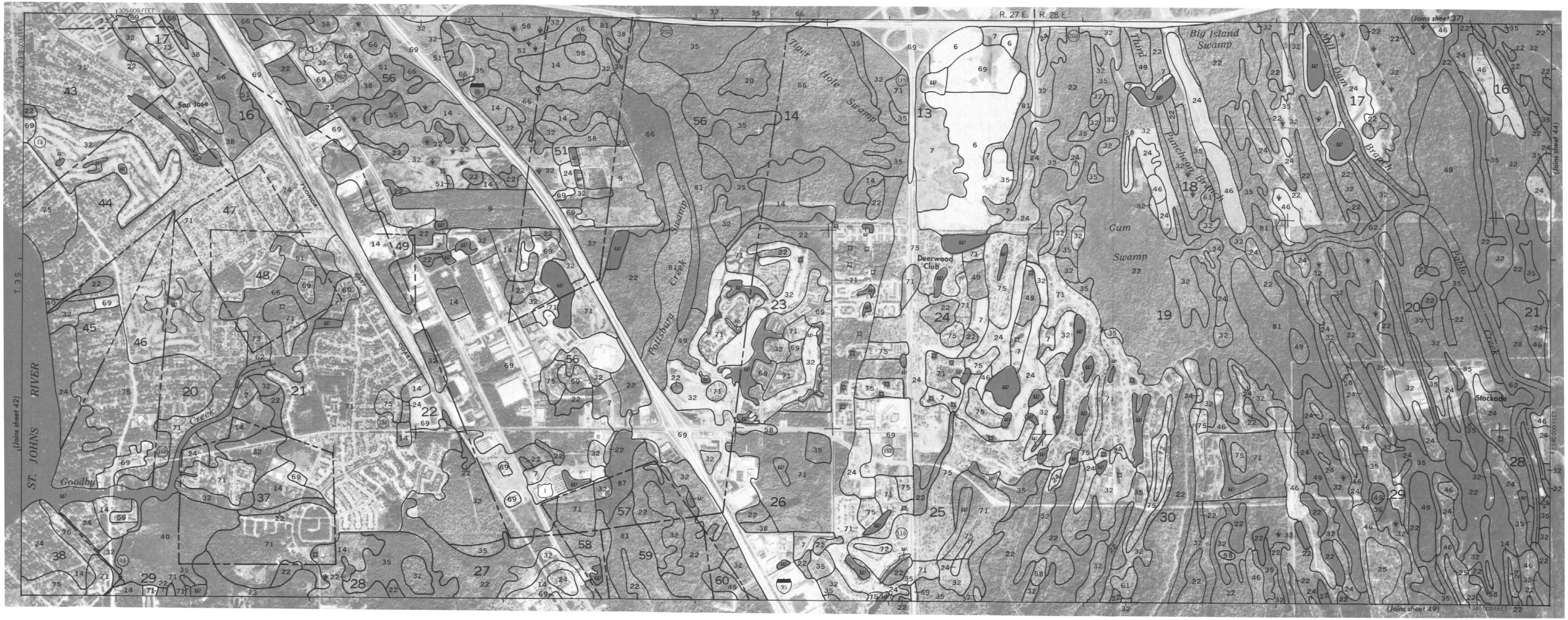
SCALE 1:24 000


42
N
R. 25 E. | R. 26 E.
(Joins sheet 36)
R. 26 E. | R. 27 E.
Oak Hill
Wesconnett
Venetia Terrace
Fishing Creek
Dewey Park
Ortega River
Venetia
JACKSONVILLE NAVAL AIR STATION
Piney Point
Christopher Point
San Jose
Casa Linda Lake
Mulberry Cove
Black Point
ST. JOHNS RIVER
Ortega Hills
(Joins sheet 41)
(Joins sheet 43)
(Joins sheet 48)
SEABOARD SYSTEM
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 43

43

N



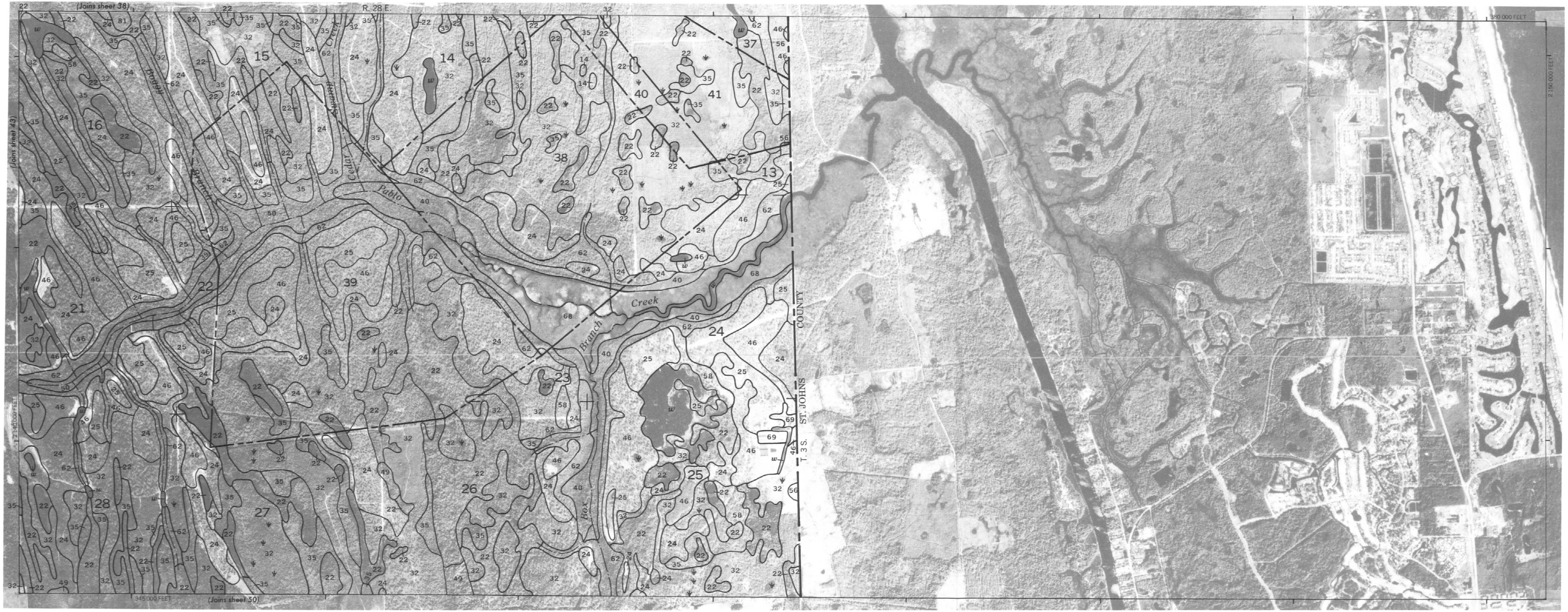
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 44



1 3/4 1/2 1/4 0 1 2 MILES

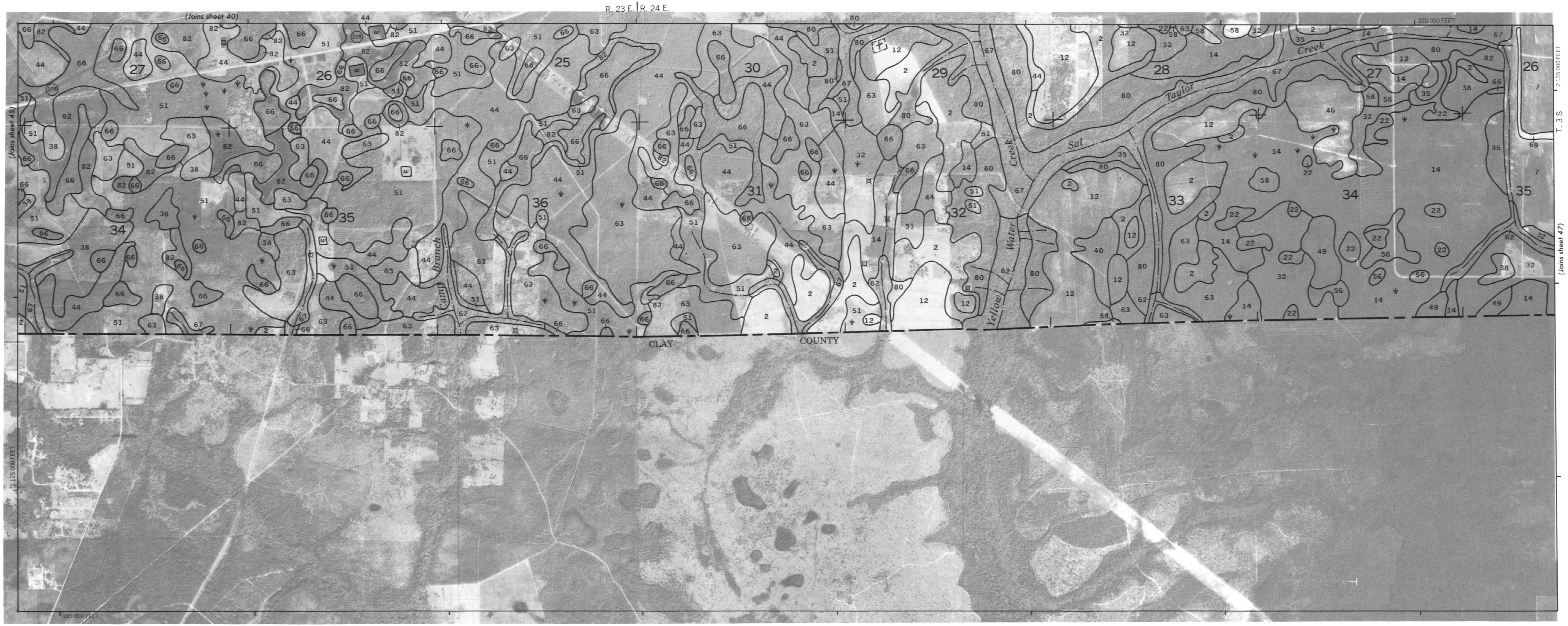
1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000


45
N
145 000 FEET
2 135 000 FEET
R. 23 E.
(Joins sheet 39)
(Joins sheet 46)
T. 3 S.
BAKER COUNTY
CLAY COUNTY
Maxville
SEABOARD
SYSTEM
28
29
30
31
32
33
2 125 000 FEET
180 000 FEET
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 46

N



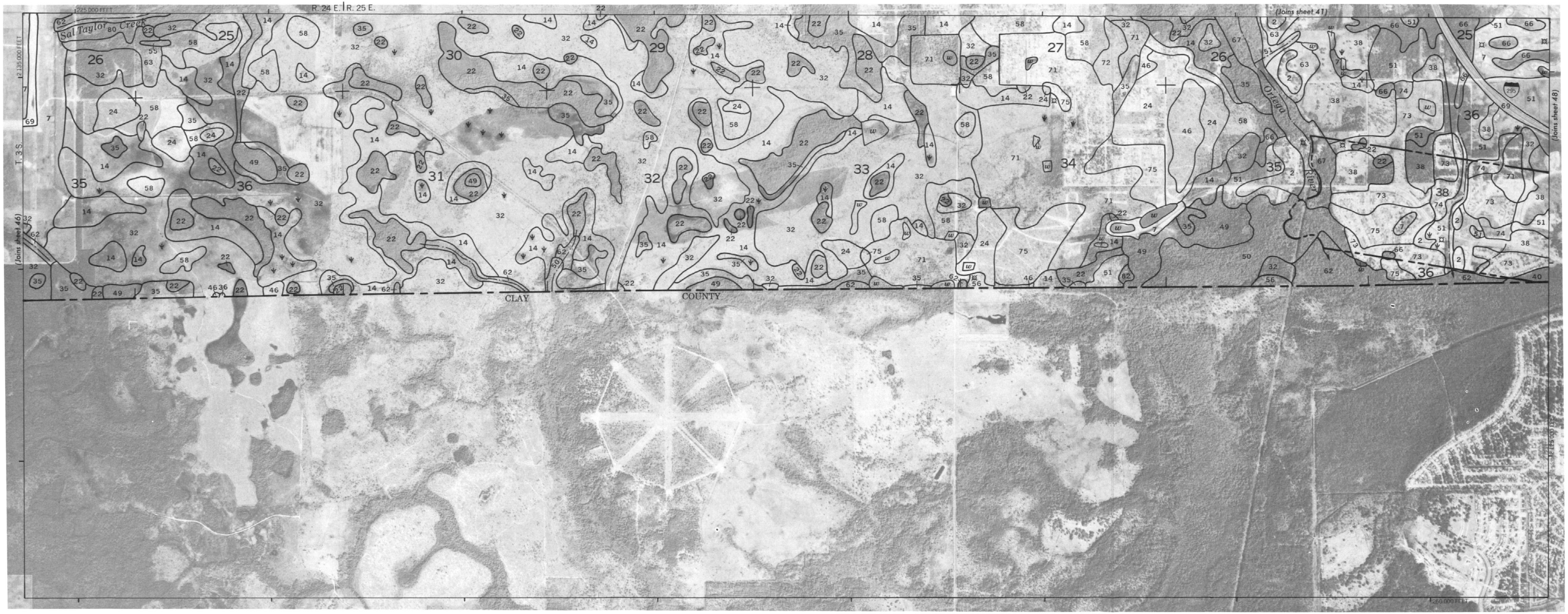
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

47

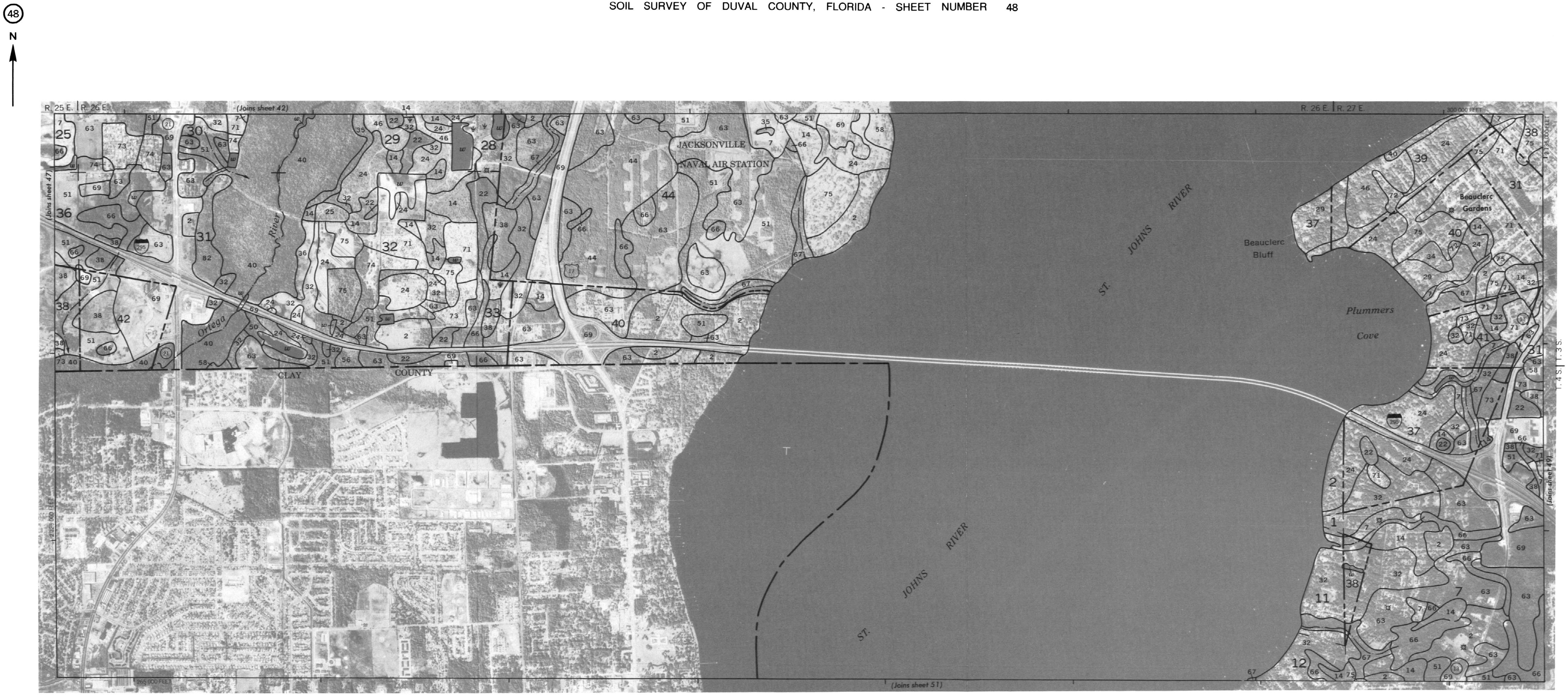
N



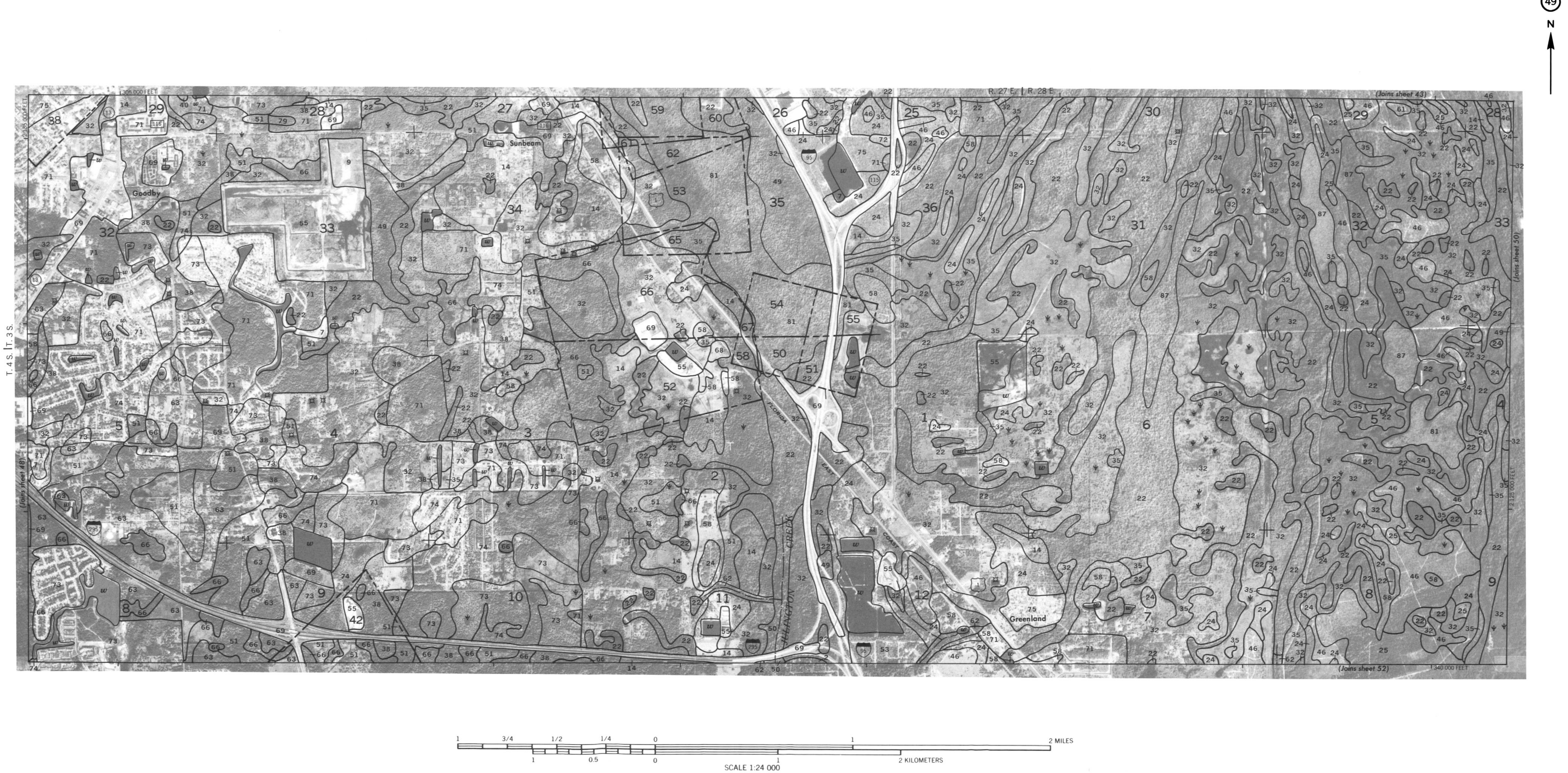
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000



1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000


49
N
305 000 FEET
R. 27 E. | R. 28 E.
(Joins sheet 43)
(Joins sheet 48)
(Joins sheet 50)
(Joins sheet 52)
T. 4 S. | T. 3 S.
1 225 000 FEET
340 000 FEET
Goodby
Sunbeam
Greenland
FLORIDA EAST COAST
JULINGTON CREEK
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 50

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

N

SOIL SURVEY OF DUVAL COUNTY, FLORIDA - SHEET NUMBER 52

R. 27 E. | R. 28 E.

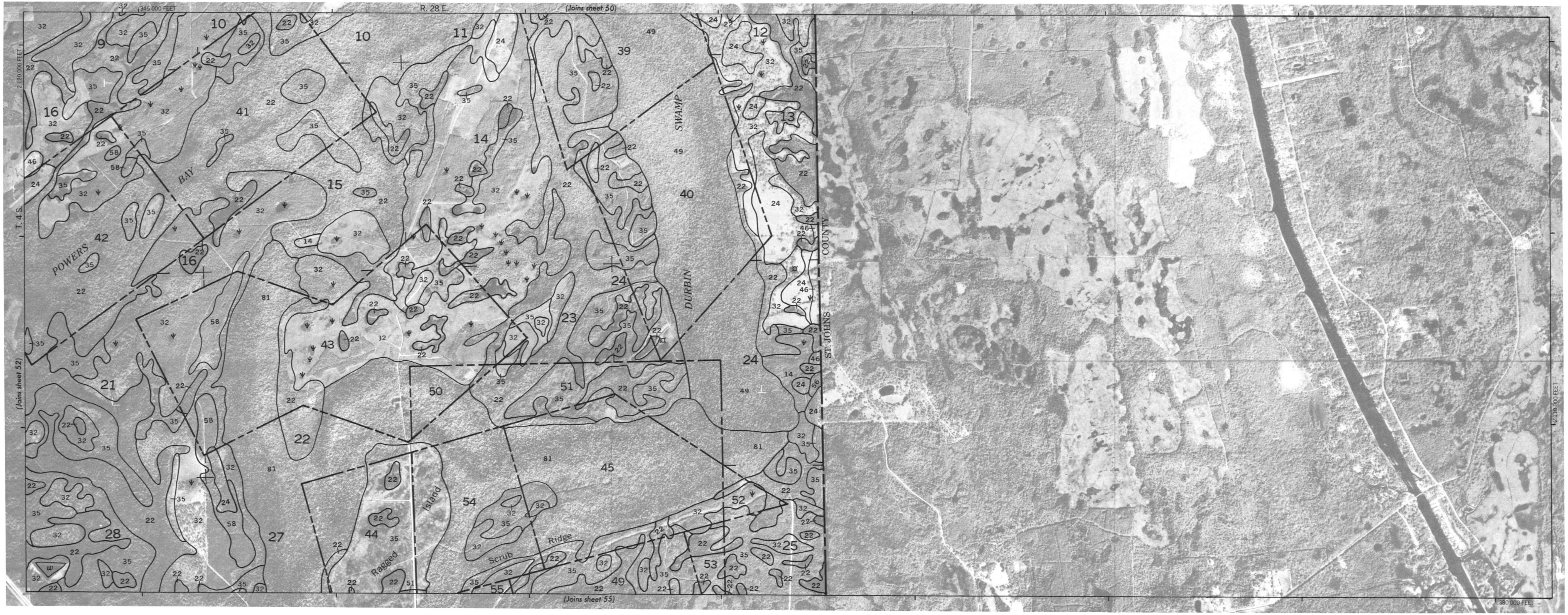
1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000

53

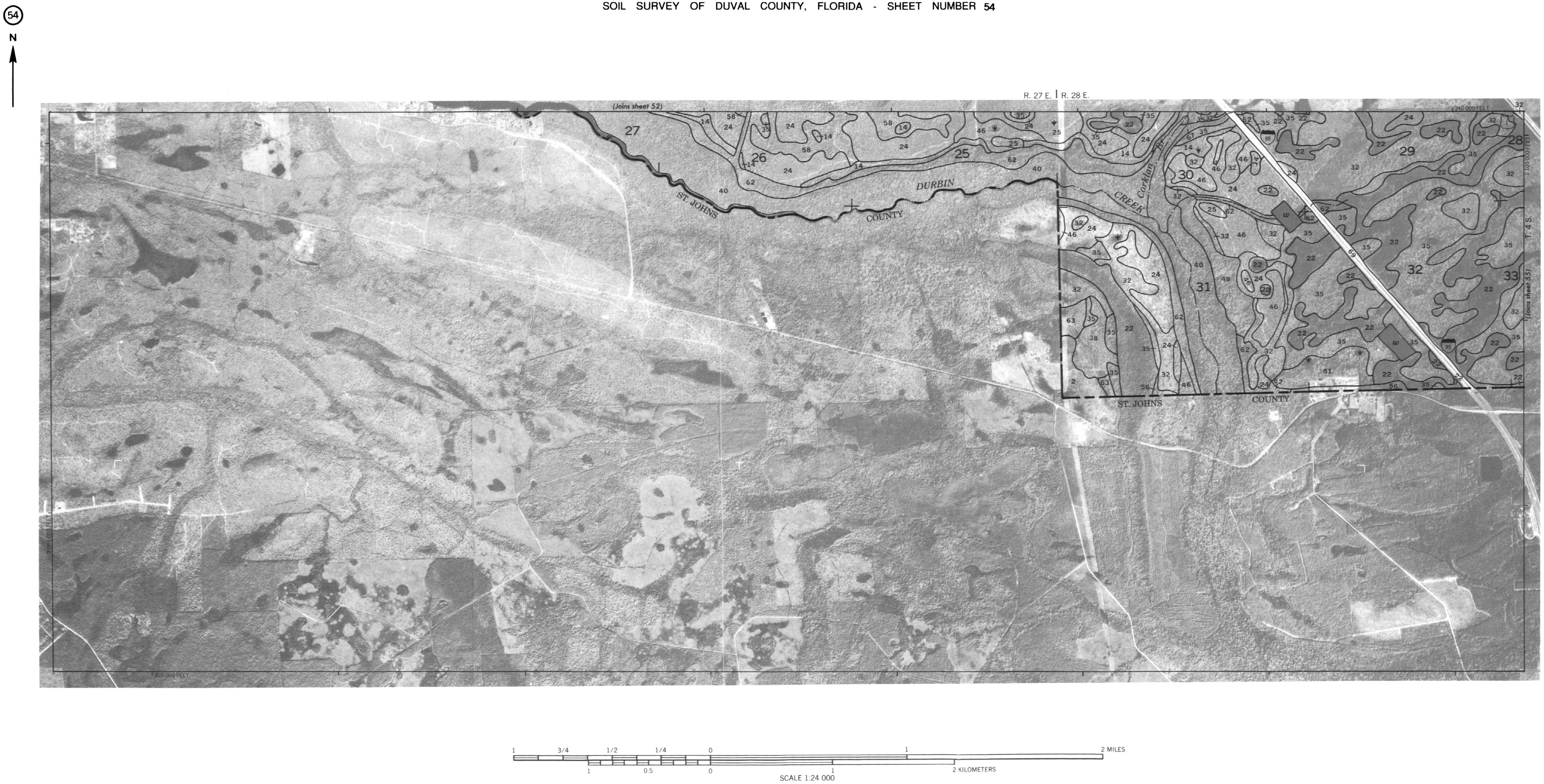
N



1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000


54
N
R. 27 E. | R. 28 E.
(Joins sheet 52)
(Joins sheet 55)
T. 4 S.
ST. JOHNS COUNTY
DURBIN CREEK
Corklan Br.
340 000 FEET
2 100 000 FEET
305 000 FEET
1 3/4 1/2 1/4 0 1 2 MILES
1 0.5 0 1 2 KILOMETERS
SCALE 1:24 000

55

N

1 3/4 1/2 1/4 0 1 2 MILES

1 0.5 0 1 2 KILOMETERS

SCALE 1:24 000